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ABSTRACT

This publication contains materials used in the three phases of the reading and mathematics components of work-specific classes. Each section begins with an overview of developments in that phase. Section 1 focuses on Phase 1 during which math and reading were taught as separate components. It contains a math placement appraisal, worksheets and quizzes for math and trigonometry, and information sheets and exercises on DOS commands and managing a hard disk. Section 2 focuses on Phase 2 during which reading and math components were taught separately. It provides the following: crossword puzzles and word searches that incorporate work-specific vocabulary, main idea practice, reading pretest word problems, line graphs, and a pay stub exercise. Section 3 covers Phase 3 that uses three components to integrate reading, mathematics, communication, and other critical skills: (1) pretest to write an Individual Instruction Plan; (2) cooperative learning groups to solve enrichment activities specific to the plant; and (3) production of a video presentation that addresses departmental education needs. The first component includes PLUS (People Leaping Upward to Success), a mathematics program for the workplace, with objectives, pretest/posttest, individualized education plan, and sample PLUS assessment materials. The second component contains plant-specific applications for math, covering place value, addition, subtraction, multiplication, division, fractions, and decimals. Miscellaneous tests, activities, and checklists used in the classes are also provided. (YLB)

ED 369 954

READING AND MATH

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CE 066 423

READING
AND
MATH

Section 1: Phase 1

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Section 2: Phase 2

Sherri Cartee teaches basic skills and writing classes. She taught at Lakeside Middle School in Anderson and Easley High School in Easley before coming to WestPoint Pepperell. Sherri attended Anderson College and Furman University, where she earned a BA in English. She has two wonderful children, Jeremy and Katy, and she live in Anderson. She enjoys reading, writing, camping, hiking, sewing, quilting, and Contra dancing.

Section 3: Phase 3

Jeanette Wood teaches GED, literacy, math, and measurement classes. She is responsible for coordinating project-related efforts in the finishing plant, including those related to the task analysis procedure, project records, and class promotion. Jeanette attended Clemson University where she earned a Bachelors Degree in Elementary Education. Jeanette and her four-legged friends, Goldie and Georgia live in Clemson.

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The enclosed materials were developed at

WestPoint/Stevens, Inc.

in

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SECTION 1

Phase 1

PHASE 1

The reading component of the work-specific classes went through several developmental changes. During the first class series, we taught the math and reading as separate components.

For the reading, we used a computer program, Vocabulary Builder, to teach technical terms to the Maintenance Department in the Finishing Plant. The math was taught in small groups.

The employees were given a Math Placement Appraisal. After scoring the appraisal, we determined the skills that they needed to cover. Some employees needed to review basic math concepts and others were ready for the metric system and algebra. The pages that follow are just some of the many materials that we used to teach the first phase of math.

Some of the Maintenance employees needed to know how to use DOS in order to operate a diagnostic computer for some equipment in the Finishing Plant. Therefore, we taught a short DOS computer class to meet this objective.

Math Placement Appraisal
Finishing--Maintenance Department

Topic 1--Addition

1) 51478
1562
+ 654

2) 231 + 6793 = __________

Topic 2--Subtraction

3) 2786
- 499

4) 963 - 211 = __________

Topic 3--Multiplication

5) 47
x 36

6) 840 x 32 = __________

Topic 4--Division

7) $\frac{153}{6}$ = __________

8) 66 ÷ 11 = ________

9) 810 / 30 = __________

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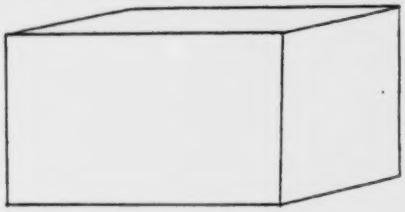
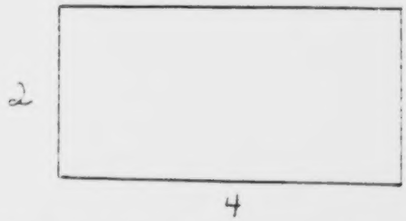
Topic 8--Measurement

20) Label the edges of this figure using the words *length*, *width*, and *height*.



21) The *Perimeter* of the figure below is ________ m.



22) What is the approximate circumference of a shaft that has a diameter of 36 mm?__________

Hint: C = pi x d where pi = 3.14 and d = diameter

a. 39.14 mm
b. 117.66 mm
c. 113.04 mm
d. none of these

Topic 9--Metrics

23) One kilometer is equal to ______________ meter(s).

a. one tenth of a
b. ten
c. one hundred
d. one thousand

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BASIC MATH REVIEW

1. $\begin{array}{r} 2341\text{ m} \\ \underline{+345\text{ m}} \end{array}$

2. $\begin{array}{r} 32465 \\ \underline{-9214} \end{array}$

3. $\begin{array}{r} 345 \\ \underline{\times 23} \end{array}$

4. 12/2

5. $3 + 3.4 + 5.213 =$

6. $2.3234 - 1.23$

7. $\begin{array}{r} 2.34 \\ \underline{\times 2.1} \end{array}$

8. $1.23\overline{)369}$

9. $\begin{array}{rr} & \frac{1}{2} \\ + & \frac{3}{2} \\ \hline \end{array}$

10. $\begin{array}{rr} & \frac{3}{5} \\ + & \frac{2}{7} \\ \hline \end{array}$

11. $\begin{array}{rr} & \frac{3}{5} \\ - & \frac{1}{5} \\ \hline \end{array}$

12. $\begin{array}{rr} & \frac{3}{4} \\ - & \frac{1}{5} \\ \hline \end{array}$

13. $\frac{2}{5} \times \frac{7}{4}$

14. $\frac{6}{13} \div \frac{8}{39}$

15. Write $\frac{6}{7}$ as a decimal

16. Write 25% as a decimal.

17. 80% of 12 is what?

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Metrics

Name something that would hold 2000 milliliters (2000 ml) of water.

____

Name something that would hold about 70 milliliters (70 ml) of water.__________________

What happens to water at 100 degrees Celsius?____________
How many degrees Fahrenheit is that?______________

Water freezes at __________ degrees Celsius.
How many degrees Fahrenheit is that?______________

Name something you use at work that would weigh about 1 gram (1g)._______________

Name something you might see at the dinner table that weighs about 50 grams (50 g).____________________

What might you use at work that weighs about 5 kilograms (5kg)?______________________

Find the square on the floor with tape around it. What are the dimensions, in feet, of that square?____________________________
About how many square centimeters (cm)is that?_______________________
About how many square millimeters (mm) is that?____________________

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Metric conversion Practice

Use ratios and proportions to solve the following problems.

1.) If one quart of oil costs $.69, how much will it cost me to change my oil? (I need five quarts and I already have a filter.)

2.) My truck payment for one month is $142.66. I owe for 2 more years. How much do I owe?

3.) Your Supervisor wants you to decide is it is possible to fit a 12-meter long machine in a space that is 36 1/2 feet long. Will it fit? How many meters is 36 1/2 feet?

4.) For the new Ralph Lauren sheets, the dye formula calls for 2.3 grams of yellow pigment. How many ounces is that?

5.) The temperature on a certain range must be between 180 and 220 degrees Fahrenheit. The actual temperature is 118 degrees Celsius. Is it within the acceptable limits?

METRIC CONVERSION REVIEW

K H Deka M Deci C M

1. .325 mm = __________m

15 km = __________hm

.5632 m = __________cm

942.3 km = __________cm

35.86 cm = __________m

.7632 dm = __________hm

78.879 hm = __________km

.435 km = __________mm

6.335 hm = __________dm

100 decameter =__________dm

2. If a room measures 13 meters by 20 meters and we want to put down a hardwood floor, how many **square centimeters** of flooring would we need?

3. In the same room above (#9), how many **centimeters** of molding would we need to go all around the base of the room?

4. How many liters are in 5 quarts?

5. How many kilograms are in 9 pounds?

6. How many kilometers are in 1.6 miles?

7. How many feet are in 9.4 miles?

8. How many meters are in 2.6 inches?

9. How many centimeters are in 8.2 inches?

10. How many inches are in 34.3 centimeters?

from Calculator Games, Puzzles, and Brainteasers
by Burton Marks
illustrated by Alan Snow
Derrydale Books, New York. 1988.

(1.) If the robot factory made **1 4** robots, and all but **6** were sold, how many would still be left?

5 3 8 - 3 4 % 6 3 - 2 =

(2.) A gardener raked up **7** piles of leaves at the back of his house and **6** at the front. How many piles would he have if he put them all together?

3 6 5 x 6 % 2 - 1 0 9 4 =

(3.) If there are **1 2** large-size eggs in a dozen, how many small size eggs are there in **2** dozen?

1 8 8 6 + 8 - 3 8 2 ·/· 6 3 =

(4.) What number gets smaller when it is turned upside-down?

1 1 3 X 5 - 5 6 2 X 3 =

(5.) What can always be seen at the beginning of the year?

4 5 3 1 2 ·/· 3 8 4 - 4 2 ·/· 4 =

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RULES FOR SIGN NUMBERS

X

(+)(+) = +
(-)(-) = +
(+)(-) = -
(-)(+) = -

Ex) (5)(2) = +10
(-5)(-2) = +10
(-5)(+2) = -10
(+5)(-2) = -10

/

(+)/(+) = +
(-)/(-) = +
(-)/(+) = -
(+)/(-) = -

Ex) 10/2 = +5
(-10)/(-2) = +5
(-10)/(+2) = -5
(+10)/(-2) = -5

+

(-) + (-) = -
(+) + (+) = +
(+) + (-) = subtract and take the sign of the larger number.

Ex) -5 + (-2) = -7
+5 + (+2) = +7
+5 + (-2) = +3
-5 + (+2) = -3

-

(+S) - (+L) = -
(+L) - (+S) = +
(-) - (+) = - (add)
(+) - (-) = same as (+) + (+) = (+)

Ex) (+5) - (+10) = -5
(+10) - (+5) = +5
(-10) - (+5) = -15
(+10) - (-5) = (+10) + (+5) = +15

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WORKSHEET

Simplify each expression below:

1. $2^1 + 4^3 - 3^2$
2. $9^0 - 5^3 + 7^2$
3. $6^2 - 8^3$
4. $-2^2 - 3^2$
5. $9^1 + (-2)^3 - 3^2$
6. $4^0 + 2^3 - 10^2$

Solve the following equations. (Show all work and check you answers)

7. $x + 2 = 10$
8. $y - 4 = 1$
9. $a + 4 = 2$
10. $7x = 21$
11. $-3y = 36$
12. $-2a = -12$
13. $4x = -44$
14. $-y = -3$
15. $5a = 12$
16. $x/4 = 2$
17. $y/-4 = 3$
18. $a/-5 = -6$
19. $2x/3 = 4$
20. $-5x/7 = -10$
21. $6a/7 = -12$
22. $x + 30 = 2$
23. $y + (-3) = 10$
24. $a - (-3) = 10$
25. $y + (-7) = 15$
26. $a + (-7) = -3$
27. $y + (-8) = -20$
28. $x + 3 = -5$
29. $y + (-1) = -6$
30. $a + 6 = -10$

WORKSHEET 2

1. What do you do with the exponents of like bases when you divide?

Divide each of the following terms:

2. y^3/y^7
3. y^3/y^3
4. y^3/y^{10}
5. y^8/y^3

6. $12a^3/(-4a^2)$
7. $8d^3e^2/(2d^3e)$
8. $-35y^5z^3/(5y^2z^2)$

9. $15a^4/3a^7$
10. $12rs^2/(4r^4s)$
11. $3ab^5/(4b^2)$

12. $(9t)^2/(9t)^{11}$
13. $(8x)^6/(8x)^{10}$
14. $(7x)^0/(7x)^0$

15. What do you do with the exponents of like bases when you multiply?

Multiply each of the following terms:

16. $2^3 * 2^7$
17. $8^9 * 8^5$
18. $(2x)^3\,(2x)^{17}$

19. $(8x)^0\,(8x)^1$
20. $y^7 * y^7$
21. $(7x)^3\,(7x)^9$

22. What do you with the exponents when you raise a power to a power?

Simplify.

23. $(2^5)^2$
24. $(3^4)^3$
25. $(x^3)^{20}$

26. $(2a^4)^3$
27. $(3y^4)^2$
28. $(n^5)^{21}$

29. $(2x^5y^3z^7)^5$
30. $(-2x^8y^6)^3$

REVIEW PROBLEMS

Simplify the following using the rules for exponents:

1. $(x^4)(x^3)=$

2. $(x^2)(x^6)(x^1)(x^3)=$

3. $(x^2)(x^6)(x)(x^0)=$

4. $(x^{10})(x^6)(x^{21})=$

5. $(x)(x)=$

6. $(x^8)/(x^2)=$

7. $(x^{10})/(x^{10})=$

8. $(x^4)/(x^2)=$

9. $(x^5)/(x)=$

10. $(x)/(x^5)=$

11. $(x^{10})^4=$

12. $(x^2)^3=$

13. $(x)^8=$

14. $(x^0)^2=$

15. $(x^8)^9=$

Use the calculator to simplify the following problems:

16. $4^8=$

17. $5^0=$

18. $5^4=$

19. $2^1=$

20. $12^3=$

QUIZ

NAME____________________

Simplify each expression below:

1. $8^2 + 3^2 =$
2. $9^1 - (3)^2 + 4^4 =$
3. $5^0 + (-3)^2 + 4^1 =$

Solve the following equations: (Show all work)

4. $x + 5 = 23$
5. $y - 6 = 2$
6. $a + 2 = 1$
7. $8x = 64$
8. $-10y = 50$
9. $-a = -2$
10. $x/3 = 2$
11. $y/4 = -5$
12. $a/-8 = -2$
13. $2x/3 = 4$
14. $3y/7 = -9$
15. $7a/4 = -14$
16. $a + 12 = 9$
17. $y + (-6) = 3$
18. $z - (-3) = -6$
19. $y + (-4) = -6$
20. $-x = -12$

FINAL EXAM

Simplify each expression below:

1. 5^4

2. $3^2 - (2)^3 + 8^2$

3. $4^2 + (-2)^4 + 8^0$

Solve the following equations: (Show all work and check your answers)

4. $a + 3 = 10$

5. $x - 6 = 3$

6. $y + 10 = 4$

7. $4x = 48$

8. $-5a = 100$

9. $-3y = -33$

10. $\frac{4x}{5} = 16$

11. $\frac{-3x}{4} = -9$

12. $y + (-4) = -4$

13. $x + 8 = -10$

14. $y - (-4) = 12$

Solve the following:

15. $\frac{y^5}{y^3}$

16. $\frac{9a^2b^4c^6}{12a^3b^2c^6}$

17. $\frac{(7a)^3}{(7a)^{13}}$

18. $a^4 * a^8$

19. $(2a)^{9} * (2a)^{10}$

20. $2^3 * 2^9$

21. $(n^4)^5$

22. (2a[illegible]$c^3)^3$

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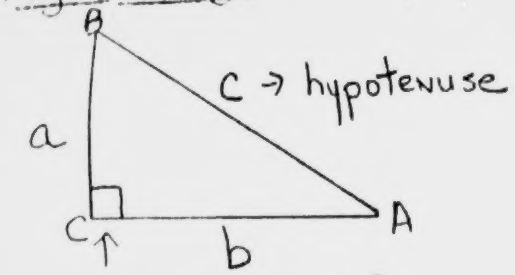
Right Triangle



Right Angle = 90°

Functions

- Sine ⟷ secant
- Cosine ⟷ Cosecant
- Tangent ⟷ Cotangent

Trig Functions

$$\sin A = \frac{\text{length of opposite side}}{\text{length of hypotenuse}} = \frac{a}{c}$$

$$\cos A = \frac{\text{length of adjacent side}}{\text{length of hypotenuse}} = \frac{b}{c}$$

$$\tan A = \frac{\text{length of opposite}}{\text{length of adjacent}} = \frac{a}{b}$$

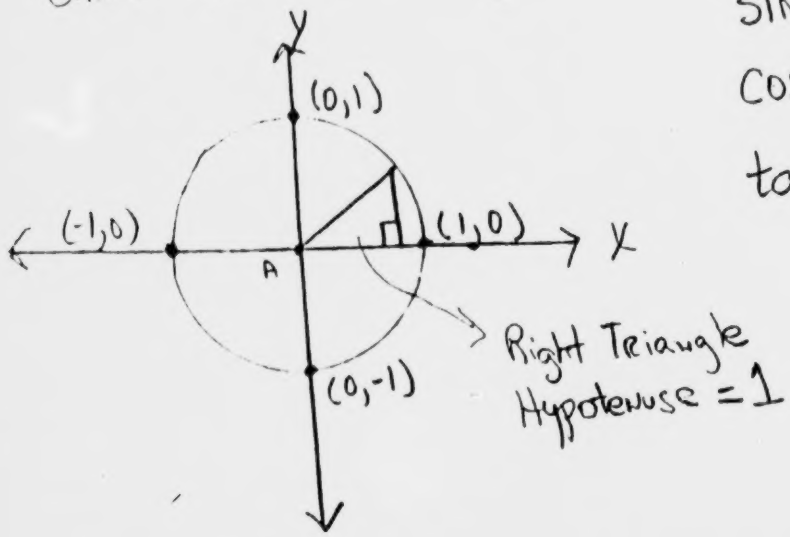
Inverse Functions

$$\sec A = \frac{\text{length of hypotenuse}}{\text{length of opposite side}}$$

$$\csc A = \frac{\text{length of hypotenuse}}{\text{length of adjacent}}$$

$$\cot A = \frac{\text{length of adjacent}}{\text{length of opposite}}$$

Unit Circle (x, y)



$$\sin A = \frac{y}{1} = y \qquad \sec A = \frac{1}{y}$$

$$\cos A = \frac{x}{1} = x \qquad \csc A = \frac{1}{x}$$

$$\tan A = \frac{y}{x} \qquad \cot A = \frac{x}{y}$$

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DOS COMMANDS

AND

MANAGING A

HARD DISK

Trig Functions

Inverse Functions

DOS

DOS stands for Disk Operating System. DOS is a collection of commands designed to make it easy to create and manage files, run programs, and use the peripherals attached to the computer (printer and disk drives).

DIR COMMAND

DIR is the Directory Command which lists all the files that match a name you specify. This is used to find out which files are on a diskette or fixed disk in case you do not remember how a particular name is spelled, or you do not remember which files are on the disk.

There are several ways to list files using the **DIR** command:

*To list all the directory entries on the default drive which is C:
At the C:\> type **DIR**

*If the listing was short you could read the list; however, if it was long you probably could not read the list unless you are an excellent speed reader. To list all directory entries on the C: drive one page at a time:
At the C:\> type **DIR/P**

*To list all the directory entries on the C: drive in columns:
At the C:\> type **DIR/W**

*To list all the directory entries on the A: drive:
At the C:\> type **DIR A:**

*To list all the directory entries on the C: drive that begin with the letter "D":
At the C:\> type **DIR D*.***

*To list all the directory entries on the A: drive that begin with the letter "RE":
At the C:\> type **DIR A:RE*.***

FORMAT COMMAND

Every new diskette must be formatted. Also, old diskettes may be formatted again when the data on them becomes outdated or is otherwise no longer useful. The first thing FORMAT does is erase everything on the diskette. Just like erasing a chalk board, the format command wipes the diskette clean.

*To format a new diskette in drive A: *(All of our computers except two on second row - C & D)*
At the C:\> type **FORMAT A:**

*To format a new diskette and copy DOS onto the diskette in drive A:
At the C:\> type **FORMAT A:/S**

*To format a 720K diskette in drive A of an IBM PS/2: *(Two computers on second row - C & D)*
At the C:\> type **FORMAT A: /N:9 /T:80**

DATE COMMAND

The DATE command is used to enter or change the system date.

*To view the system date:
At the C:\> type **DATE**

If the date is correct, press **ENTER**. If the date is not correct, type the correct date following the MM/DD/YY format and press **ENTER**.

TIME COMMAND

The TIME command is used to enter or change the system time.

*To view the system time:
At the C:\> type **TIME**

If the time is correct, press **ENTER**. If the time is not correct, type the correct time following the HH/MM/SS format and press **ENTER**.

NOTE: The clock is a 24 hour time clock, so for example, at 1 pm, you should enter 13:00:00.

VER COMMAND

The VER command is used to display the DOS version number that you are using.

*To view the version of DOS currently being used:
At the C:\> type **VER**

TREE COMMAND

The TREE command is a special command for microcomputer users to display all of the sub directories and paths that exist on the hard disk. It will come in very useful if you can not remember the names of the subdirectories or where they are located.

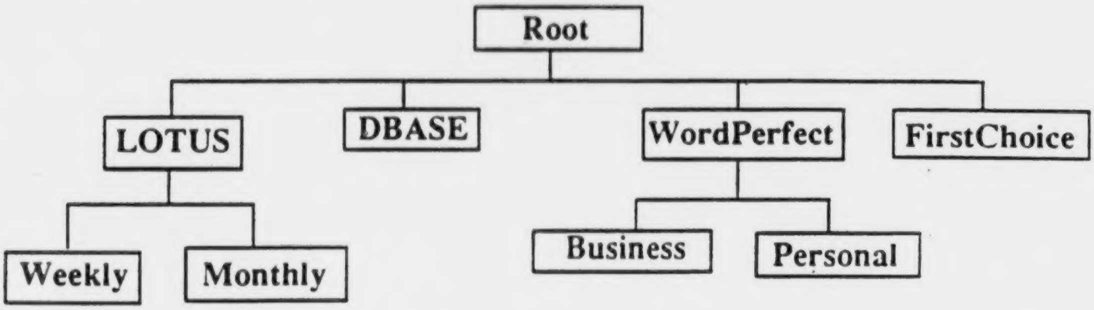
*To display all the subdirectories on the hard disk:
At the C:\> type **TREE**
If it moves too fast on the screen, hit the **Pause** key on the keyboard.

DOS Assignment 1

1. List all the directory entries on the C drive by page.
2. List all the directory entries on the C drive by column.
3. List all the directory entries on the A drive that begin with the letter "A".
4. List all the directory entries on the C drive that begin with the letter "A".
5. What does DOS stand for?
6. Format a new diskette.
7. What version of DOS does your computer have?
8. Change the date on your computer to May 15, 1996. Verify the date to see if it has changed. Then change it back to the current date.
9. Change the time on your computer to 5:15 pm. Verify the time to see if it has changed. Then change it back to the current time.
10. What does the TREE command do?

SUBDIRECTORIES

A fixed disk can have many files on it. If you keep a large number of files in one place on your fixed disk, it can take longer for DOS to find a particular file. Keeping the files in related groups in subdirectories can help to organize your files and reduce the time required to locate a file.



The above chart shows one way that a fixed drive might be organized. The highest level is the ROOT directory. When you start DOS on your computer, you are in the root directory. The root directory is indicated by a backslash(\).

```
At the C:\> type cd\
```

This will always put you in the root directory.

Below the root directory are subdirectories. These subdirectories are created by the user to organize their files.

THE CD COMMAND

CD stands for change directories.

To change to one of these subdirectories do the following:

```
At the C:\> type cd\lotus
```

*Try changing to the root directory and then change to the DOS directory.

PROMPT PG

In order to determine where you are at any given time, do the following:

```
At the C:\> type prompt $P$G and enter
```

This will show you on the screen in which directory you are located. Some computers have this command programed into a batch file and it will automatically show you where you are. Other computers are not programed; therefore, you must type the above command into the computer.

THE MD COMMAND

The MD command is used to make a directory on the hard disk. Remember that directories or subdirectories are used to save processing time and to keep the hard disk organized.

```
At the C:\> type MD\WestPoint
```

THE RD COMMAND

The RD command is used to remove one subdirectory at a time. Two rules apply when removing a subdirectory.

Rule 1: The subdirectory has to be empty.
Rule 2: You can not be in the subdirectory that you are removing. (That's like cutting off a tree limb and you are on the side that will fall to the ground.)
At the C:\> type **RD\WestPoint**

BATCH FILES

A Batch file is a file containing one or more commands that DOS executes one at a time. All batch files must have a filename extension **.BAT**.

A Batch file may be created using a word processor or by using the DOS command.

To create a batch file using DOS, do the following:
At the C:\> type **Copy Con Clemson.Bat**
At the Clemson WestPoint Pepperell Plant, we work hard to make good quality sheets and pillowcases.
press **F6**
a ^Z will appear on the screen, then you can press **Enter**

To execute this file:
At the C:\> type **Clemson**

THE TYPE COMMAND

The TYPE command displays the contents of a specified file on the standard output device (the screen or printer).

To see the contents of a Bat file, do the following:
At the C:\> type **TYPE Autoexec.bat**

THE COPY COMMAND

The Copy command is used to copy a single file or to copy multiple files when using metacharacters. A file can be copied from one disk to another or can be copied within the same disk.

*To copy a file within the same disk:
At the C:\> type **Copy Clemson.bat Seneca.bat**
*To copy a file from one disk to another:
At the C:\> type **C:Copy Clemson.bat A:Clemson.bat**
*To copy multiple files to another disk:
At the C:\> type **Copy *.bat A:**

THE DEL COMMAND

The DEL command is used to remove specified files from a disk.
*To remove a file from the default drive:
At the C:\> type **Del Clemson.bat**
*To remove a file from drive A:
At the C:\> type **Del A:Clemson.bat**

Do not try these until you create files and subdirectories that you want to delete.
*To remove a file from the default drive subdirectory CLASS:
At the C:\> type **Del \CLASS\filename.ext**
*To remove all files with the extension .TXT:
At the C:\> type **Del *.TXT**

CHEAT SHEET

DOS Commands:

CD	Change Directory
COPY	Copy File
DEL	Delete File
DIR	Display Directory
FORMAT	Format Disk
MD	Make Directory
RD	Remove Directory
TREE	Display all Directories
DATE	View, Enter or Change Date known to DOS
TIME	View, Enter or Change Time known to DOS
VER	Display the version number of DOS

Reserved File Extensions: (Do not use)

.COM
.EXE
.SYS

Reserved File Names: (Do not use)

(Any file ending with one of the Reserved File Extensions)
(Do not use a * or ? within a file name when naming a file)
(Do not use a Space within a file name)
(Do not use any Special Characters within a file name)
(Do not begin a file name with a number)
CON
AUX
COM1
COM2
LPT1
PRN
LPT2
LPT3
NUL

DOS Assignment 2

1. Format your diskette.

2. Create a file called CLASS.BAT (Hint: COPY CON) Type a couple of sentences into the file. (For example: How dare you do this to us!!!)

3. Copy the file from the C drive to your disk. Verify that the file is on your disk.

4. Create a subdirectory on the root directory called LEVEL1.

5. Create a subdirectory in LEVEL1 called LEVEL2.

6. Create a file in LEVEL2 called VICTORY.YES . Again, type a couple of lines, but be kind!

7. Use the special command that displays the subdirectories and paths. When it is on your screen, press the key that says PRINT SCREEN so you will have a print out of the subdirectories. (Do you see the ones that you created?) Don't forget to turn on the printer and set the box to your computer!

8. Create a batch file called SETUP.BAT (Hint: COPY CON). Make the batch file show the current date, time, and the version of DOS you are using. (Hint: Use the DOS commands that you learned.)

9. Breathe a sigh of relief. You are finished.!!!

SECTION 2

Phase 2

PHASE 2

The reading and math components were still taught separately. The students enjoyed the computer program and the supplemental crossword puzzles and word searches. However, many did not see the relevance of working with terms they felt they already knew. We tried to add exercises to develop comprehension skills, but found that time constraints limited the effectiveness of those exercises.

In order to overcome some of these weaknesses of the reading portion of the classes, we decided to combine reading and math work by teaching reading skills through math word problems. This strategy helped increase motivation and learning, and it helped us better use the short time we had in which to increase skill levels. We tried to develop some interesting problems with local-interest stories. As we taught basic skills, we also taught strategies for finding meaning in text in order to solve problems. In addition, we used newspaper graphs to teach reading and math applications for graphs.

Our first attempt at developing an assessment tool was a learning experience. It was a creative attempt, but the end result was far too dense in content and problem solving expectations to be useful as a valid measuring tool. In order to increases validity and to avoid the intimidation and fear that the first test generated, we changed the assessment by shortening he reading portion and by limiting the number of operations required in each problem. The new assessment was much more satisfying.

During the last set of classes, we tried another approach to teaching reading skills. We developed a prototype computer program which taught students how to read information on their weekly check stub. This module was designed to meet a real need among employees. The program was designed to increase computer awareness, ability to interpret forms, and ability to use the information on the check stub.

Name: ____________________

Date: ________________

```
P H W L C G O P Q   G S L S K N W Q B Z G V • A • H Q P B D X E
N X S • F L • • O • S P N I B S H F D F Q Y L • F N F K J • D F
C W U O   Z D K J V J T Q K F Y C C A L E N D A R Y T M U I • N
Z • E C W P A E V L A V   R O T A U T C A C B   D N L F F Z Y •
Y Y U K I H A J • M C L   • X Y E N O I T A R B I L A C A • R E
J J Q • G • B J C X B N X B Z • C I K L T   T   B C L • H A A A
R I B D E • A O • V R W M L D V A J O • V N H A • A A G B I D P
N E Z I J Y C T • R K F M R • O U B M C Q I F C L R B H M • • W
P • Y K Y S K Q P O O   • G O B S W R • B L U E P R I N T • Y O
R • O T X G   D K • L E • Y   V T K X H C T L • • I L T   D O B
E A O U E I L • • • B S K N C • I J F • I   Y Z B E Y • U G T X
E C J O G P O W F J E E U • D O C X • N M Q • • O R Z H J P R F
• E X - A R G Q C G A •   P O • • • A L B Z A L V   U K S S G D
C T A K C N Q • • R R N L   F • V M V Y • Z V • I R R M E X • A
Y I • A T M R V T B I A F G S R E H S A W   R I A O C • O I • T
F C • E D B B • R I N O E X P Q J F Y A I S N   N L • W • K C W
W   • R • • E • Q A G B Q O F K U • X H A L O • A L W T L E B T
• A P B K F L • W S S H A E V D Q L A   Q C T M O   M F L R W
E C U E X R T U • E E K Q C R • Y P • I S • Y K Z • I F • E S I
A I L C • L   P M J C X W K Z G I M X S   V P G B • V F M •   H
N D W N •   G C • • • O W R V R N Q Y N T • A A H R C M M I P O
S J P P B S U H J • • O G   E L T W Z E N • L G N   Q Z O P U N
D O F E • T I A N D W I H O G • P H • P V L •   • B I G • • K •
O R R     • D I D I F K • Z K Y P • V I   J P H K Y Y R R • • U
M A • B J   E N J   G C N U J W F Y A V O T D S K C U S D B S T
• B S • • L N   P L C • • K M O • D A G C • J F P F • N D I F A
O   J   F Y U F F • E • G F C N L L   P • Q   E X • Y • Q A J P
H W L B K • O A A • C K G O • N V X Q S K Q   Q L Y S I F T V C
P O Q W • X   L N P K D R E H E X L K Q K Y Y W S • N J • T K E
A B C • N L E L E • U Z Y P Q F P N Q N • • S R A • N D R A E B
Q • H F W W S • C T S V M G L N • N O I S N E T   T L E B O W W
J M W • U • Z Y Z Q S P • A • P A Q R Q • J E Z R X D K K • J P
```

Can you find these words in the puzzle?

actuator valve
air washers
back log
ball valve
bearing
belt
belt guide
belt tension
bias
blueprint
bow
bow bar
break-out
cage
calendar
calibration
carrier roll
caustic
chain fall
acetic acid

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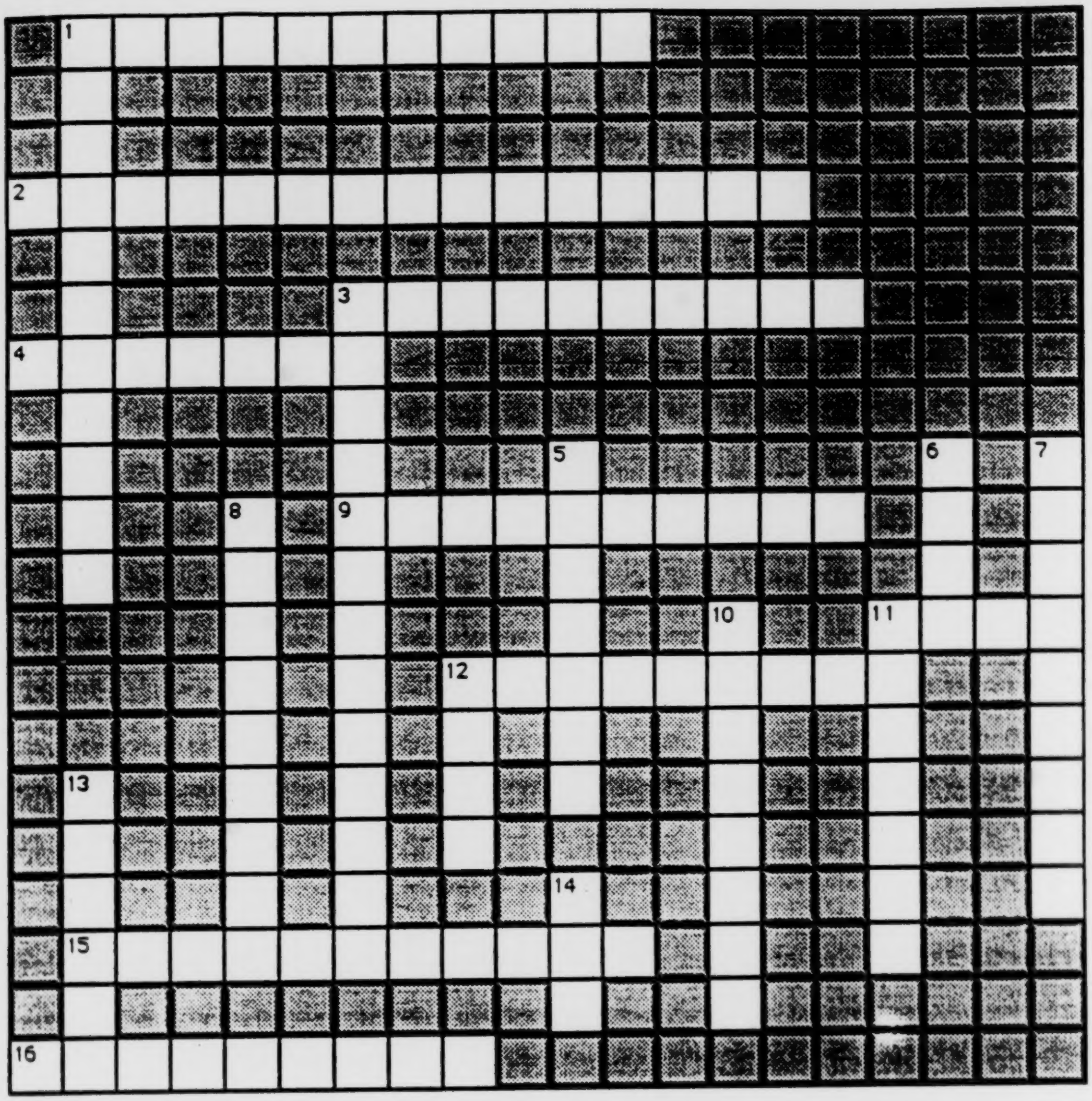
MECHANICS 1



Word List: MECHANICS 1

ACETICACID
ACTUATORVALVE
AIRWASHERS
BACKLOG
BALLVALVE
BEARING
BELT
BELTTENSION
BELTGUIDE
BIAS
BLUEPRINT
BOWBAR
BOW
BREAK-OUT
CAGE
CALIBRATION
CALENDAR
CARRIERROLL
CAUSTIC
CIRCULATIONPUMP

BEST COPY AVAILABLE

Across

1. cylinder that transfers cloth from one location to another
2. pump that moves liquid through the water in a washing cycle
3. solution used in dyeing, printing, bleaching
4. chemical used in bleaching process
9. devices that provide water-cooled air to the finishing plant
11. a band around two pulleys to connect them for driving an object
12. a pipe cut-off containing a ball; rotates up to 90 degrees to open or close
15. tightness of the print belt
16. fabric torn-out of machine process by pressure or mechanical failure

Down

1. checking the accuracy of equipment or of measuring tools
3. controls gas flow to dryer
5. work that is requested but is held for completion in the future
6. basket used to lift worker up to higher level.
7. system on a print machine that keeps the print belt in line
8. detailed outline of an object
10. machine which uses pressure and heat to create shine on cloth
11. part of a machine on which another part turns
12. a slant in the weave of the cloth from one selvage to the other
13. a curved rod that keeps cloth rolling up on grain
14. a curve in the weave of the cloth from the middle out to both selvages

Answers: MECHANICS 1

	C	A	R	R	I	E	R	R	O	L	L								
	A																		
	L																		
C	I	R	C	U	L	A	T	I	O	N	P	U	M	P					
	B																		
	R					A	C	E	T	I	C	A	C	I	D				
C	A	U	S	T	I	C													
	T					T													
	I					U				B							C		B
	O			B		A	I	R	W	A	S	H	E	R	S		A		E
	N			L		T				C							G		L
				U		O				K			C			B	E	L	T
				E		R		B	A	L	L	V	A	L	V	E			G
				P		V		I		O			L			A			U
	B			R		A		A		G			E			R			I
	O			I		L		S					N			I			D
	W			N		V				B			D			N			E
	B	E	L	T	T	E	N	S	I	O	N		A			G			
	A									W			R						
B	R	E	A	K	-	O	U	T											

electricians 2

Name: ____________________

Date: ____________

```
V M S T G • G P H U D N • K O C I T A M E H C S • V R   • H B A
I S T Q G W P B T G M N X O W Q R M E O V L • • G X R X K D •  
D N T K • • L P Y X S M F H W M M P R E H E A T   S W I T C H W
V • F H Q G N • E • J • C C O M B O   B L E A C H E R W G J Z W
  U E I Y S T W O Y O Z L F L A E • Z N L K   B • U H T Y X G Z
R R I A E • G V U G E D N I Q P F Q • • • V K E K G W A • H N E
K M N N W B A C K   L O G A T A F K K • G P V L A J J Z N I V G
A U C K • • M A R G A I D   R E D D A L N J F Q • Q T H U M • A
P K B N W U Q W M Q J J X N   E • V B J O • • D O O I X •   M W
H Z S O G M • Z A H H R X C A I I • M S I Y C A O J K X Z N   J
D J B E • T N I X U T • I A C U I • Z V S • R O D • V B T D E U
F Y • Z • P A R F A V V Y L C W V C Z J S T X • F Y • N Y O • T
• U • W D L K C M F W   C E K D A T P • I C I K R • • W A M P  
Q Q C • O • U F H Y Y G X N X N B R • S M X • X B I X A I S M R
• D O   C R L P L O K X D D A • T • A H S V • P M H A Z • K U M
G   V S K • K X N Q M W • A M R L T • U N O Q L B P U J L   P F
T Z O C O Q C   A S S E N R C E • Q • T A Z R • E G M V L •   Z
• H O H N L M E O • • V T I • A D Z X X R S X A • V R E A R N •
• S • C U P T J U R Q W N E Z C U I M V T U I N L • • E F E O B
A J I T Y O • Q P F D L C S R S A H U V K R •   B • O •   T I •
P N S I • Y F D N X N E M Z C C Y C   G   • I D U U G D N E T P
L C X W • • F S O C T • R S X O • V X W   D M C U W • M I M A H
P N • S H Q A Y O D • B M D   V   Y A J F T L I P M J • A M L Y
L J •   Y • O • J G • C P F C • • S D Q P L L B H T Q H H A U •
N V F D M Q Y T I F • T B U J V H J P S L U W E Y U V J C   C •
H B P I Q • C M • • J • O   H E • O • • N T • H B O O   F S R Z
• U P O J M M T • T V   W X R M M I B C B X • H A - B E A E I Y
P K   N V E G P O Z O H L S • • • Y I A P U O M F K H • H I C T
O W A E • Y S F • C N U Y L I R E F A K J D M S B A W U W R G O
W G O L N K M T J X K • E   L T S K S • E V P D M E I B P E P S
E J T O S N T A W X • G K Y V V O F K O U • U S K R • R J S D  
R Z Z S Y L • P • F T   W I Q V X X L G G G O M M B I • U • D J
```

Can you find these words in the puzzle?

MSDS
back log
bow
chain fall
combo bleacher
break-out
power
preheat switch
series ammeter
tachometer

air washers
bias
calendar
circulation pump
belt guide
ladder diagram
transmission
schematic
solenoid switch
work order

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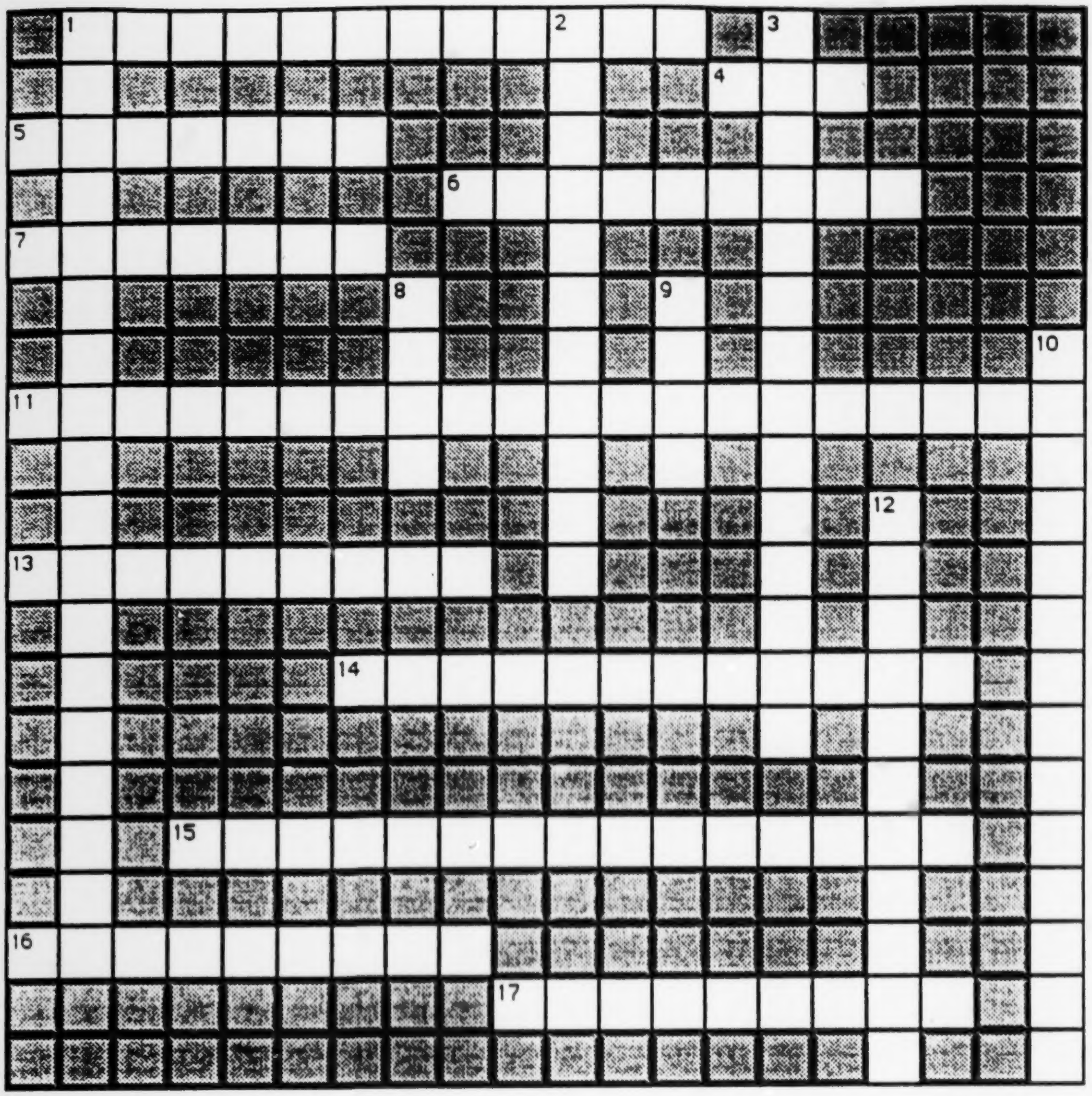
ELECTRICIANS 1



Word List: ELECTRICIANS 1

ACELECTRICAL
ANALOGVOLTOHMMETER
BACKLOG
BIAS
BOW
BREAK-OUT
CHAINFALL
CONDUIT
CONTROLANDINDICATION
CONNECTIONS
CONTROLCIRCUIT
DCELECTRICAL
DISASSEMBLY
ELECTRICALPANEL
GENERATOR
MSDA
PNEUMATICVALVE
WORKORDER

BEST COPY AVAILABLE

Answers: ELECTRICIANS 1

	A	C	E	L	E	C	T	R	I	C	A	L		C					
	N									O			B	O	W				
B	A	C	K	L	O	G				N				N					
	L							G	E	N	E	R	A	T	O	R			
C	O	N	D	U	I	T				E				R					
	G						B			C		M		O					
	V						I			T		S		L					P
C	O	N	T	R	O	L	A	N	D	I	N	D	I	C	A	T	I	O	N
	L						S			O		A		I					E
	T									N				R		D			U
W	O	R	K	O	R	D	E	R		S				C		I			M
	H													U		S			A
	M					D	C	E	L	E	C	T	R	I	C	A	L		T
	M													T		S			I
	E															S			C
	T		E	L	E	C	T	R	I	C	A	L	P	A	N	E	L		V
	E															M			A
B	R	E	A	K	-	O	U	T								B			L
									C	H	A	I	N	F	A	L	L		V
																Y			E

waste water 1

Name: ____________________

Date: ______________

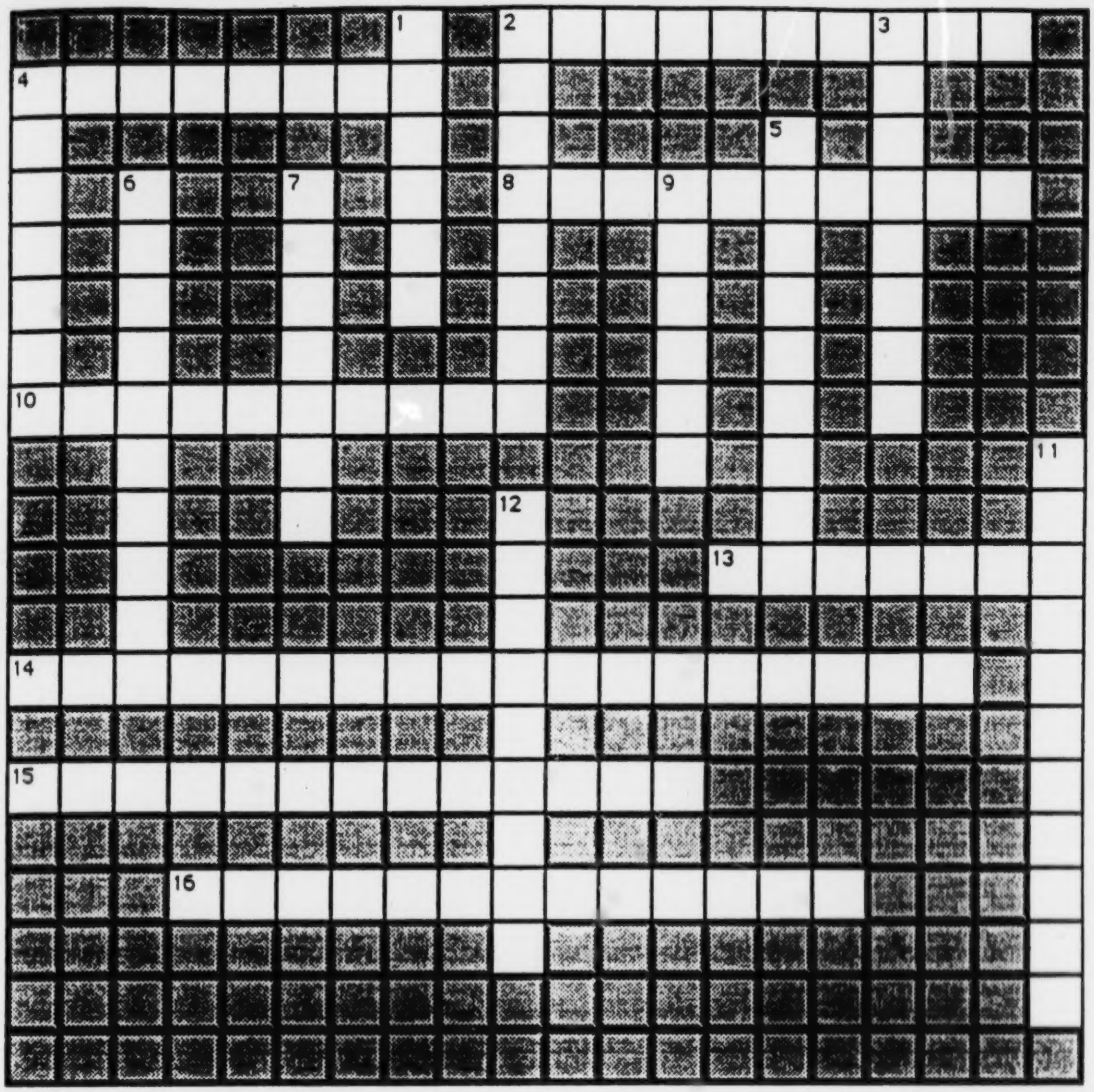
```
M Z E I O I • X • H S L V K • A I R   B I N D I N G J K L R K U
H N E G Y X O   D E V L O S S I D A N H Y D R O U S R E C C P •
• O • • T E V A M E C R Y O G E N I C N L X • N J X K M X K A A
• N • U X X C • Z Y P A • W O F D Y F W A Q M D B E D R F • Z J
•   E U I R Q X • W P N O • N W V • K K T E Q F B X A E X X L •
H • W H M B I O G E V • • H N • N B W G I H S K L • W E S S F C
O V T H   P Y E S Y Z H K C K C • B V L C V C T A • P W G • E •
• K • • Q A • H B • O Q A U • E E • R B O D G D V E M B N L L Y
• F E G U F I R T N E C T T Z M X E M • M • I Y   I T Z B • Z W
• • A B Z P •   • • L R H V P A   T Z • B B A   C P S • T S M Q
•   R N D X U   E W R • N W R O O A L A I V C V N R R C • L K •
W C E • • D C E J T T G B B F P A R B   N N A M • • M F K M W F
G • F H H I D E • Z L U B Q O B Y T V B E X R F T D Q R D B R E
N Z F T M F X J M R D • V C E D G N S • D M C N • F T U • Y Q Y
I A U S S F J   A I L Z C R J Q Y E E W   • I U F I X J A R H X
B S B Y O U • G • • T • O F Z E Z C T Z S Q N O M F A B T D M •
X E P F U S O • Y • I   Z F • O Y V A J E L O • O N B F G N H Y
P P U H M E K J W • P D N N • S Q C I O W   G R N • L O Q W N N
T T P • U R I O A T U P B O E G Y C L M E • E   P • D I I B K •
S I • Z Y B T H E C M K L • I T • O I S R C N J W V E • • J X A
U C N B M Q E • • • E B • J R T G P C B L I E I F P X N N D F L
T N W N C O Y C X •   T • G • T N V S • E N R J X F W G E W Q G
I W O • • S C P O V Z K I A Q • A E J K R O Q W M D E • Y J • •
R U R D F I M P • A T J E C Z T Z W T     R A N V P • I D H U Q
T H T R T J Z • W F G Q J •   M N K Y E S H E T F G X O R A Y C
E D • S C • A N I A D U I M V A J • Y K D C U A E R A T I O N N
D O U • B • U • N G H O L P S I C M L E O • • C Q X • T L I H E
Z A I K G T • F R • M E H A • A A I V Z H • V R D • I H • L • D
C H O H H • V S F M S Z W D T X V Q D I U J K Y G • G • P C F N
M • N H R • D • • O K Q L I H E   K E S Q M • A Z M P G U • W •
M U F   I A D G F H M Q S A M R S B • E Y W M Z O N J E Y B • G
X H • W • • F V E X Q M Q S L S • • R D M X O B J   • A F B C D
```

Can you find these words in the puzzle?

acetic acid
air binding
aseptic
carcinogen
centrate
coagulates
ciliates
cryogenic
detention time
diffuser

aeration
anhydrous
buffer
caustic
centrifuge
chronic
combined sewer
desize
detritus
dissolved oxygen

WASTE WATER 1


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

Word List: WASTE WATER 1

ACETICACID
AERATION
AIRBINDING
ANHYDROUS
ASEPTIC
BUFFER
CARCINOGEN
CAUSTIC
CENTRATE
CENTRIFUGE
CHEMICALCOAGULANTS
CHRONIC
CILIATES
COMBINEDSEWER
CRYOGENIC
DESIZE
DETENTIONTIME
DOCTORBLADE

Across

2. solution used in dyeing, printing, bleaching
4. the water leaving a centrifuge after solids have been removed
8. clogging a filter, pipe, or pump due to air released from water
10. any substance which tends to cause cancer in an organism
13. free from the germs of disease, fermentation or putrefaction
14. chemicals causing fine particles to floc together to larger ones
15. sewer designed to carry both sanitary wastewaters and water run off.
16. time required to fill a tank at a given flow

Down

1. wash water containing PVA
2. oxygen introduced to waste solution to speed breakdown process
3. class of protozoans distinguished by short hairs on bodies.
4. chemical used in bleaching process
5. very dry, with no water or dampness present
6. device that uses rotational forces to separate solids & liquid
7. effects of exposure(s) which cause symptoms to continue for a long time
9. solution which neutralizes acids without change in pH
11. used to remove excess solids on outside of rotating screen
12. related to very low temperature, and assoc. with liquefied oxygen

Answers: WASTE WATER 1

■	■	■	■	■	■	■	D	■	A	C	E	T	I	C	A	C	I	D	■
C	E	N	T	R	A	T	E	■	E	■	■	■	■	■	■	I	■	■	■
A	■	■	■	■	■	■	S	■	R	■	■	■	■	A	■	L	■	■	■
U	■	C	■	■	C	■	I	■	A	I	R	B	I	N	D	I	N	G	■
S	■	E	■	■	H	■	Z	■	T	■	■	U	■	H	■	A	■	■	■
T	■	N	■	■	R	■	E	■	I	■	■	F	■	Y	■	T	■	■	■
I	■	T	■	■	O	■	■	■	O	■	■	F	■	D	■	E	■	■	■
C	A	R	C	I	N	O	G	E	N	■	■	E	■	R	■	S	■	■	■
■	■	I	■	■	I	■	■	■	■	■	■	R	■	O	■	■	■	■	D
■	■	F	■	■	C	■	■	■	C	■	■	■	■	U	■	■	■	■	O
■	■	U	■	■	■	■	■	■	R	■	■	■	A	S	E	P	T	I	C
■	■	G	■	■	■	■	■	■	Y	■	■	■	■	■	■	■	■	■	T
C	H	E	M	I	C	A	L	C	O	A	G	U	L	A	N	T	S	■	O
■	■	■	■	■	■	■	■	■	G	■	■	■	■	■	■	■	■	■	R
C	O	M	B	I	N	E	D	S	E	W	E	R	■	■	■	■	■	■	B
■	■	■	■	■	■	■	■	■	N	■	■	■	■	■	■	■	■	■	L
■	■	■	D	E	T	E	N	T	I	O	N	T	I	M	E	■	■	■	A
■	■	■	■	■	■	■	■	■	C	■	■	■	■	■	■	■	■	■	D
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	E
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

MAIN IDEA PRACTICE

Try to think of a word to fit in the blank **WITHOUT** reading the choices below the paragraph. If you can't think of a word, look below the paragraph and see which one you think fits best. Choose a word and write it in the blank provided. Next, read the three statements below the paragraph. Choose the statement that *Best* tells the main idea of the paragraph. One will be correct; the other two will be wrong: one will be too general, or broad, and won't tell enough specifics about the paragraph. The other will be true, but it will leave out important information contained in the paragraph. In other words, it will be too narrow.

When people try to swat flies, they often miss. It seems as though flies know that something is coming at them. Well, flies do have a way of knowing. They have tiny hairs all over their bodies. You can see the hairs if you look through a microscope. Some are long and some short. These hairs let the fly feel when the air around it moves. So when you swing to hit a fly, the fly can feel the swish of air. This gives the fly plenty of time to ____________

……

hit die move

(a) The many hairs on flies' bodies help them feel what is going on around them.
(b) Flies have tiny, sensitive hairs all over their bodies.
(c) Flies sense some things in ways that people can't.

The Finishing Plant at WestPoint Pepperell in Clemson is a hot, humid place to work. In the Finishing Plant, fabric undergoes many changes; these changes require heat, much water, and several different chemicals. Most often, fabric must be bleached before dye is applied to the cloth. The bleaching process uses heat, water, and chemicals to remove PVA, remove slubs and pills on the fabric, and to apply bleach. The fabric must be washed in hot water; then dye is applied. The dye must be heat set. If the fabric is printed, it must go through PVA removal and bleaching before it can be printed. Printed patterns are also heat-set on the fabric. Another process adds heat to the Finishing Plant; the chintz machine, or calendar, uses high heat and pressure to give a shine to printed ____

……

paper cloth dyes

(a) Heat and humidity are in the Finishing Plant.
(b) The calendar machine adds heat to the Finishing Plant.
(c) Machines and processes necessary for fabric finishing add a great deal of heat and humidity to the Finishing Plant

BEST COPY AVAILABLE

READING PRETEST

Read the following problems and solve. Please show all your work.

The Atlanta Braves had over three million fans in attendance at home games last year. They set a new attendance record for the team. This year, we are supposing that in April, one hundred eighty-eight thousand fans attend. In May, four hundred sixty three thousand, two hundred twenty attend. In June, five hundred fifty nine thousand, thirty eight attend. In July, four hundred ninety eight thousand, five hundred sixty two attend. In August, six hundred fourteen thousand, eight attend, and in September and beyond, one million, one hundred thousand, seventy attend.

1. What is the total number of fans who attend Braves games this year?

2. Is this number more or less than the three million record mark?

3. What do you think the number of fans this year means? Please answer in at least one complete sentence.

Artemis decided to go on a trip to Nashville, but he wanted to know how many miles he would have to drive to get there. He wanted to get there in one day, and he wanted to try to avoid rush hour traffic as well as avoid as many meals on the road as he could. He checked his map and found that the distance from his home to Chattanooga was 180 miles. The distance from Chattanooga to Nashville was 338 miles.

1. What was the total distance from Artemis's house to Nashville?

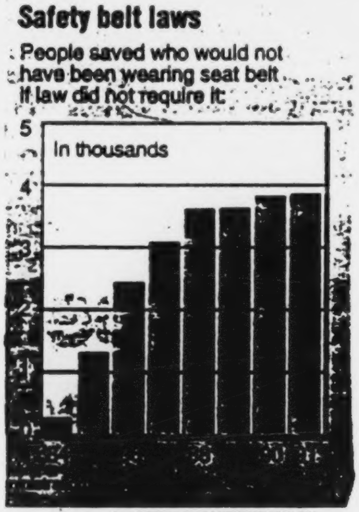
2. What is the round trip mileage for Artemis's trip?

3. Do you think Artemis can get to Nashville in one day? How long do you estimate it will take him to get there?

4. What does Artemis want to avoid on his trip? How can Artemis do this? Please answer in at least one complete sentence.

From information in the graph below, find the number of people in serious car accidents during 1987 whose lives were saved. __________

What other information does the graph give the reader about all these people?



On the grid below, create a line graph comparing the monthly attendance at Atlanta Braves home games over the course of the season, as it was listed in the first problem on the previous page.

Jerry just got a new job, and he is so proud! He will work every other week, 12 hours a day, manufacturing special ice cream scoops. These ice cream scoops have carved wooden handles in the shape of Eskimos. It may seem like a silly job, but Jerry will make a salary of $3,500 per month.

In fact, Jerry was so excited that he started looking for a new car. He found an Acura that he wanted, and he learned that the price was $28,000. Jerry felt rich, so he thought he could afford his dream car on his new salary, since the monthly payments would be $550 per month after trade-in. When he told his wife about it, however, she suggested that he make out a budget so he could see if he really could afford it. Actually, that is the last thing she suggested to him . The first thing she suggested to him was that he get his head examined. As a matter of fact, she did more than suggest; she shouted.

"Think about it," she said. "You know we have a $700 per month house payment. We also have water, power, and sewage bills of $326 per month. Besides that, every month we have $435 in grocery bills, $80.89 car insurance, clothes for the children at $60 per month, if I scrimp and shop the garage sales. I know I make $200 per month with my babysitting business, but I spend $80 per month for gas, and you spend $25 more on your gas than I spend on mine. You buy lunches and snacks at work, and that eats up $27 per week."

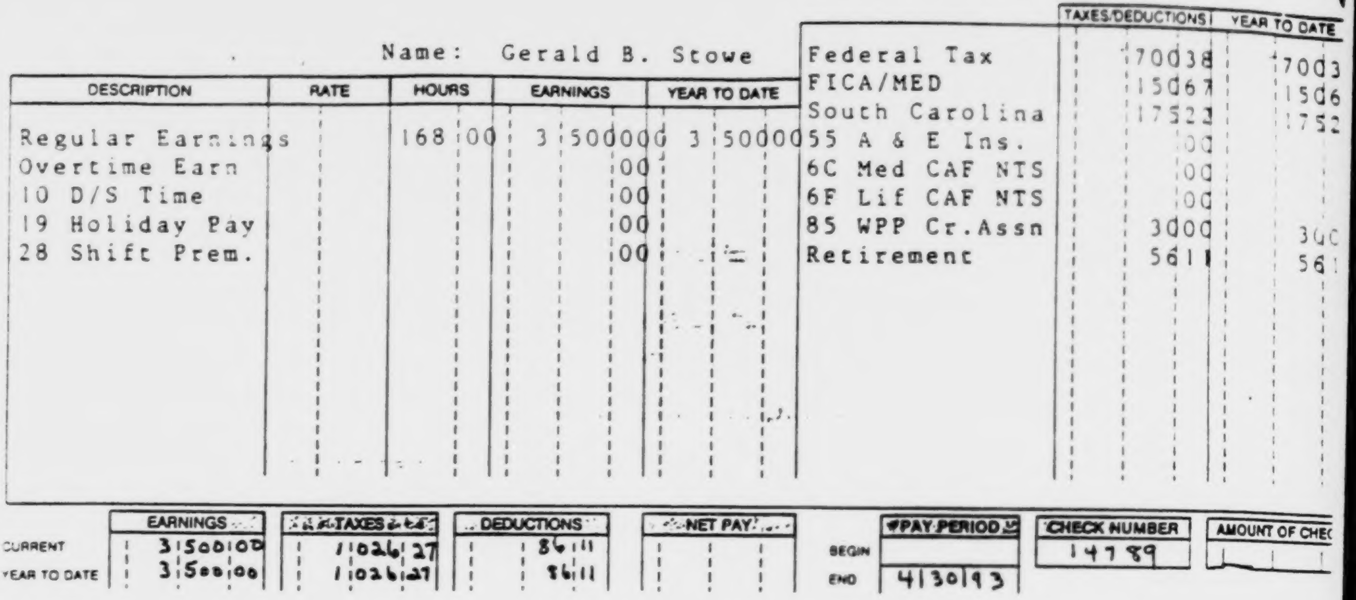
"Wait," Jerry interrupted. "I could take my snacks and lunches, and we could save gas money by trading for this smaller car. Also, this car would last us for many years, and would not need repairs as often."

His wife was ready for him. "No, you wait. A car costs more than a payment. Insurance would be more expensive. Besides, we already owe $1800 in repair bills on our old car that we are paying off $50.63 per week. I think repair costs would be much cheaper for our old car than they would be for this new, expensive car anyway. Remember, we also pay $63 per month toward our credit card debt. Cable TV costs $53.89 per month, because you insisted that we get HBO and Showtime," she said.

She continued, "The children need money for school lunches -- $6.20 per week for each of the three children. I haven't even mentioned school expenses, entertainment for the kids and us, vacation, unexpected bills, (and here her voice got louder), doctor bills, hair cuts, newspaper, and my weekly $5 line-dance classes. I'm sure that's not even the whole list, but it's a start. Listen, before you even figure what the bills do to your new salary, you'd better figure the withholdings made before you ever get your check. I know that $3,500 sounds like a lot of money, but it dwindles fast. I don't want to even hear you mention the car to me again until you have all the figures worked out."

With that she stormed out of the room and slammed the door.

Jerry wanted the car so badly that he decided to do what she asked, even though he hated doing anything with finances, especially budgets. His first task was to find out what the balance of his salary would be after withholdings were deducted. He checked with the payroll office and found that several amounts would be withheld from his check.



Name: Gerald B. Stowe

DESCRIPTION	RATE	HOURS	EARNINGS	YEAR TO DATE
Regular Earnings		168 00	3 500 00	3 500 00
Overtime Earn			00	
10 D/S Time			00	
19 Holiday Pay			00	
28 Shift Prem.			00	

	TAXES/DEDUCTIONS	YEAR TO DATE
Federal Tax	700 38	700 3
FICA/MED	150 67	150 6
South Carolina	175 23	175 2
55 A & E Ins.	00	
6C Med CAF NTS	00	
6F Lif CAF NTS	00	
85 WPP Cr.Assn	30 00	30 0
Retirement	56 11	56 1

	EARNINGS	TAXES	DEDUCTIONS	NET PAY
CURRENT	3 500 00	1 026 27	86 11	
YEAR TO DATE	3 500 00	1 026 27	86 11	

	PAY PERIOD
BEGIN	
END	4 30 93

CHECK NUMBER	AMOUNT OF CHEC
14789	

What was the amount of Jerry's check after all withholdings had been deducted? Write your answer in **two** correct places on the check stub above.

If Jerry cancelled his voluntary retirement plan and his savings plan deductions, what would his check be?

Next, Jerry needed to find out how much money would be left from each check after deducting all his family's monthly expenses. He is going to use only HIS income. Also, he is not going to count his wife's gas money, since it comes from her check. He will list all the expenses that his wife quoted amounts for. He will leave out the other expenses that she didn't give an amount for, because he hopes enough will be left over so that he can fudge a little and have enough for his car. Wherever she mentioned an amount per WEEK, Jerry will add it in four times to find the amount for a month. How much will be left every month after Jerry pays all his bills?

Be sure to list and label each expense separately. There is room on the next page to show your work.

Example: **House payment** **$700**

Does Jerry have enough income to buy his Acura? Why did you choose the answer you chose?

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WORD PROBLEMS

Word problems usually include clues for how to solve them. One of those clues is a key word. Below are some common key words used.

KEY WORDS

Addition Key Words

sum
plus
add
and
total
increase
more

raise
both
combined
in all
altogether
additional
extra

Subtraction Key Words

less than
more than
decrease
difference
reduce
lost
nearer
farther

left
remain
fell
dropped
change
other -er comparison words

Multiplication Key Words

multiplied
times
total
of
per

as much
twice
by
area
volume

Division Key Words

divided (evenly)
split
each
cut
equal pieces

average
every
out of
ratio
shared

Addition

John loves fishing. On a really good day, he catches 20 to 30 fish. Some days John comes home with 10 bass. Bass is his favorite fish. Last Saturday John went fishing for the whole day. At first he used his lures to try for bass. All morning he fished. For a long time he didn't even get a nibble. Then he got lucky. He hooked 6 fish in less than an hour, but he only caught 4 of them. After that, he got no more nibbles. He decided to try different bait to see if he could catch some bream. He had 7 bites, but he landed only 3 bream. Once 1 turtle even took his line. Late in the afternoon he decided to try for some catfish. He knew his family would be happy if he brought home some catfish to eat. He set his lines, then he fell asleep. He dreamed about his other hobby, watching Nascar races. When he woke up, he discovered that 3 catfish had stolen his bait. He set his lines again, and this time he caught 2 fish, even though he lost 1 hook. One of the catfish weighed 6 pounds; the other one weighed 4 pounds, 6 ounces. He tried one more time, but this time he hooked 1 carp that weighed 5 pounds, but he threw it back. It was getting late, so John decided to go home. He was happy.

1. How many fish (not counting turtles) did John hook in all last Saturday?

2. How many fish did John catch?

3. How many fish did he keep?

4. What kind of fish does John like best?

5. What kind of fish does his family like best?

6. What else, besides fishing, does John like?

Addition

1. I have a wonderful new job which pays $45,000 per year. I only have to work 37 hours per week, and I will have 4 weeks paid vacation each year. The only bad thing about my new job is that it's in another town, 479 miles away, and the movers, "Keep on Truckin' Van Lines," want to charge me $1 per mile, plus a flat fee of $500. How much in all will the movers charge me for the move?

2. On the other hand, I could rent a truck from "Y'all Haul" for $100, plus $1.00 per mile. It sounded great, until they told me that I will have to pay for a round trip, even though I only need the truck one way. Besides that, my furniture won't even completely fill up the truck. Assuming that it's 479 miles one way, how much will renting the truck cost?

3. Now I know how expensive each choice will be. Which is the better way to move?

   a. Use the movers.
   b. Rent the truck.
   c. Use the movers and rent a truck.
   d. Consider other factors -- time, reliability, hassle, etc. -- before finally deciding.
   e. cannot be determined from the information provided

Addition

When you read word problems, look for words that give you clues so you can decide which operation to perform. In addition, words such as **sum, total, add, combine, lump together** are good clue words.

Sandra makes extra money by baking birthday cakes for friends and neighbors. Last month she made quite a bit of money. First she had to bake a chocolate cake for her nephew Andy. Her sister paid her $10 for the cake. The next day she had orders for 3 cakes: 1 for an elderly neighbor and 2 for the twins down the street who were turning 10 years old. Since the elderly neighbor was on a fixed income, Sandra only charged $6.50 for his cake. The twins' cakes, however, were more expensive, because they were decorated to look like mountains with mountain climbers on the side of the mountain. Sandra charged $20.75 apiece for these cakes. Next she received orders for 5 more cakes. Each of these was decorated to look like a Spring basket full of flowers. She normally charged $19.00 for this kind of cake, but she had a problem. While her son was delivering the cakes for her, one of them slid from the car seat to the floor and was ruined. The customer was so disappointed that she decided not to order a replacement. Then a friend asked Sandra to make a wedding cake. Sandra had never made a wedding cake before, but she agreed to try. It turned out just fine, and the bride loved it. Sandra charged only $35 since it was Sandra's first wedding cake, and since the customer was a good friend. The last order of the week was for a German chocolate cake for Sandra's next door neighbor. The neighbor was planning a party, and she just couldn't find time to cook dessert. Sandra charged $16, since the ingredients for that cake are so expensive.

1. How many cakes in all did Sandra prepare during this week? ___________

   How many did she sell?__________

   If the number is different, why is it different?

2. What was the total amount Sandra made for all the cakes she sold during this week?

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The Atlanta Braves had over three million fans in attendance at home games last year. They set a new attendance record for the team. This year, we are supposing that in April, one hundred eighty-eight thousand fans attend. In June, one million, six hundred thirty four thousand, three hundred seventy six attend. In July, four hundred ninety eight thousand, five hundred sixty two attend. In August, four hundred fifty four thousand, three hundred thirty nine attend, and in September and beyond, three hundred thousand attend.

1. What is the total number of fans who attend Braves games this year?

2. Is this number more or less than the three million record mark?

3. BONUS FOR FUN:

   What do you think the number of fans this year means?

Artemis decided to go on a trip to Nashville, but he wanted to know how many miles he would have to drive to get there. He wanted to get there in one day, and he wanted to try to avoid rush hour traffic as well as avoid as many meals on the road as he could. He checked his map and found that the distance from his home to Chattanooga was 180 miles. The distance from Chattanooga to Nashville was 338 miles.

What was the total distance from Artemis's house to Nashville?

What is the round trip mileage?

Do you think Artemis can get to Nashville in one day? How long do you estimate it will take him to get there?

What about rush hours and meals? How can Artemis avoid these things on his trip?

Line Graphs

Line graphs are pictures. They help us organize information into a pattern. Line graphs are good for showing trends, or patterns, so that we can predict what might happen next.

Look at the graph on the next page. The numbers on the left side represent the range of numbers. The range can be found by subtracting the lowest, or bottom, number from the highest, or top, number.

1) What is the range of this graph.

2) What is the title of this graph?

3) What is the difference between the penalties called in 1989 and 1990? (Hint - the time span is listed along the bottom of the graph.). Does the number seem as large to you as the long plunge looks on the graph? Does the graph give an accurate picture of the trend in numbers.

4) What do you predict will happen in 1993 and 1994?

5) Writing:

   There could be many reasons for the change in penalties called in the NFL. Think of at least one reason that you believe the change has occurred. You don't need to be a football expert. Imagine anything you wish then write your ideas and the reasons you chose your explanation.

6) Create your own line graph

   Pretend that you have gained 10 pounds during the past six months. You are trying to figure out why. You imagine that your ice-cream eating may have something to do with it. You eat hot fudge sundaes with nuts at the local drug store, and they bill you each month. You take out your bills for the past year to see if you can create a line graph to help you picture a trend and predict what might happen next.

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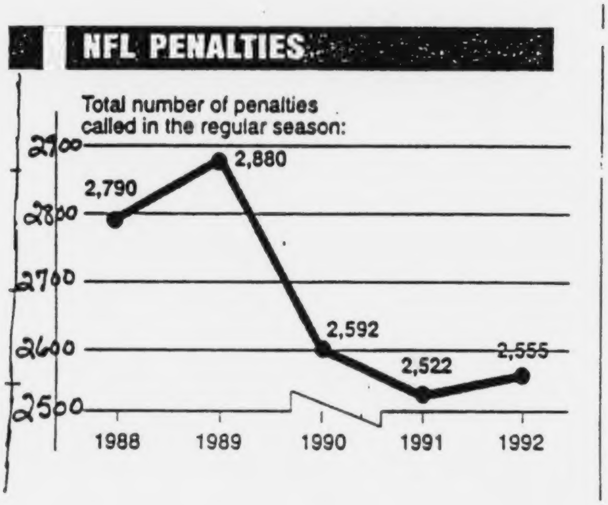


NFL PENALTIES

Total number of penalties called in the regular season:

Here are your bills for the drug store:

January

1/2	Sundae	$ 2.50
1/7	Medicine	10.00
1/25	Sundae	2.50

February

2/5	Cosmetics	$12.50
2/10	Sundae	2.50
2/20	Gift	15.80
2/27	Sundae	2.50

March

3/3	Medicine	$ 16.00
3/12	Sundae	2.50
3/18	Vitamins	8.80

April

4/4	Sundae	$ 2.50
4/7	Easter Basket	15.00
4/15	Perfume	20.00
4/19	Sundae	2.50

May

5/6	Mother's Day Cards	$ 5.25
5/10	Flowers	
5/15	Sundae	2.50
5/25	Sundae	2.50
5/30	Sundae	2.50

June

6/2	Suntan lotion	$12.50
6/10	Sundae	2.50
6/18	Lanocaine	3.95
6/26	Sundae	2.50

July

7/3	Sundae	$ 2.50
7/10	Medicine	6.00
7/13	Sundae	2.50
7/20	First Aid Kit	8.00
7/20	Sundae	2.50
7/26	Sundae	2.50

August

8/1	Sundae	$ 2.50
8/3	Vitamins	8.80
8/3	Sundae	2.50
8/7	Stationery	10.00
8/15	Cosmetics	12.00
8/25	Sundae	2.50
8/28	Sundae	2.50

September

9/2	Magazine	$ 3.95
9/3	Sundae	2.50
9/7	Stamps	5.80
9/7	Sundae	2.50
9/16	Gift	12.00
9/16	Sundae	2.50
9/24	Sundae	2.50
9/28	Medicine	6.50
9/28	Sundae	2.50
9/30	Sundae	2.50

October

10/2	Cards	$ 5.00
10/3	Sunda	2.50
10/5	Cosmetics	6.00
10.5	Sundae	2.50
10/10	Wrapping Pa	4.50
10/10	Sundae	2.50
10/15	Aspirin	3.79
10/20	Sundae	2.50
10/25	Halloween Candy	6.00
10/28	Sundae	2.50

November

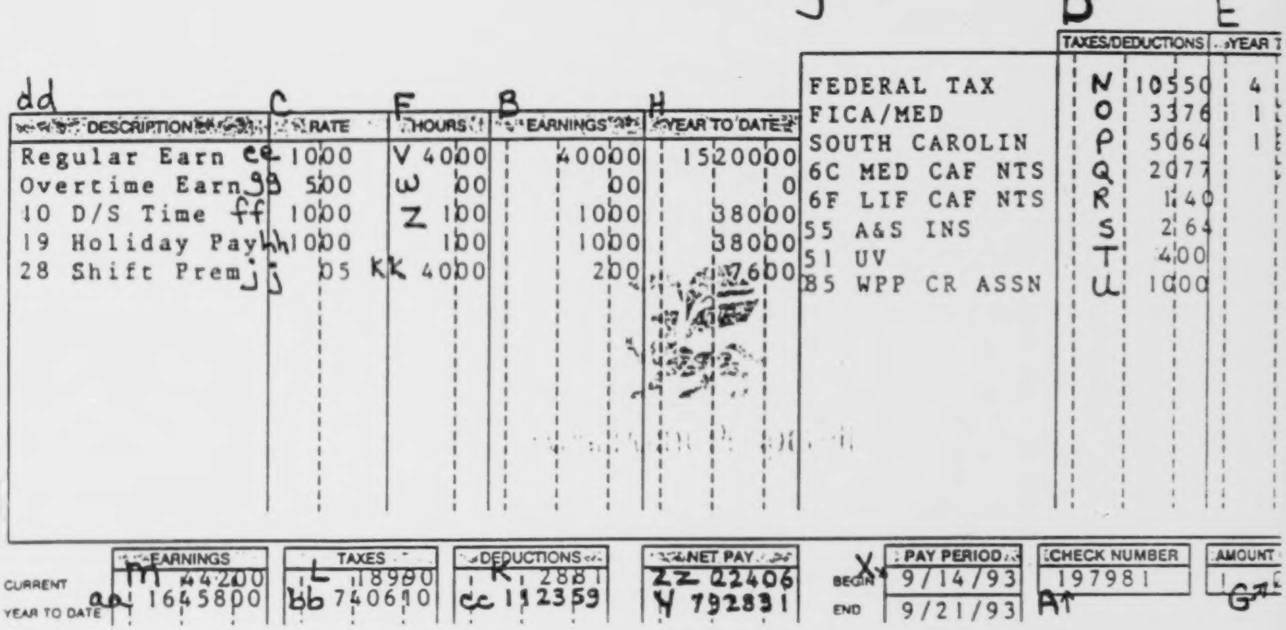
11/2	Sundae	$ 2.50
11/4	Medicine	6.50
11/12	Sundae	2.50
11/18	Cards	8.00
11/20	Candles	6.00
11/30	Sundae	2.50

December

12/2	Sundae	$ 2.50
12/4	Cards	10.00
12/6	Cosmetics	16.00
12/6	Sunda	2.50
12/8	Sundae	2.50
12/15	Gift	28.00
12/15	Sundae	2.50
12/18	Decoration	7.98
12/20	Sundae	2.50
12/29	Medicine	14.83

After you create your graph, write down what you think. Do you see a pattern or trend developing? If so, what do you predict might happen next? Why?

Name______________________________________



dd DESCRIPTION	C RATE	F HOURS	B EARNINGS	H YEAR TO DATE
Regular Earn ee	1000	V 4000	40000	1520000
Overtime Earn gg	500	w 00	00	0
10 D/S Time ff	1000	Z 100	1000	38000
19 Holiday Pay hh	1000	100	1000	38000
28 Shift Prem jj	05	kk 4000	200	7600

J	D TAXES/DEDUCTIONS	E YEAR T
FEDERAL TAX	N 10550	4
FICA/MED	O 3376	1
SOUTH CAROLIN	P 5064	1
6C MED CAF NTS	Q 2077	
6F LIF CAF NTS	R 140	
55 A&S INS	S 264	
51 UV	T 400	
85 WPP CR ASSN	U 1000	

	EARNINGS	TAXES	DEDUCTIONS	NET PAY
CURRENT	M 44200	L 18990	K 2881	ZZ 22406
YEAR TO DATE	aa 1645800	bb 740610	cc 112359	Y 792831

	X PAY PERIOD	CHECK NUMBER	AMOUNT
BEGIN	9/14/93	197981	1
END	9/21/93	A	G

Beside the numbers below, write the letter of the place on the check stub that fits the description given.

_____ 1. Find the total amount you will take home this pay period.

_____ 2. Find the column which shows the number of hours you worked this pay period.

_____ 3. Find the column which shows both the taxes and the deductions you have paid so far for the entire year.

_____ 4. Find the column which shows the names of the different kinds of taxes and deductions.

_____ 5. Find the total amount of Deductions taken from your check this pay period.

_____ 6. Find the amount being deducted from this check for your WPP Credit Union savings account.

_____ 7. Find the number of hours you were paid for Down-Stop time.

_____ 8. Find the total amount you earned this pay period before anything was deducted.

_____ 9. Find the total amount of money you have taken home this year.

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10. You want to find out how much you made per hour for your regular pay this pay period. Which operation would you choose to find the answer?

_____ A. Overtime earnings amount times the number of hours overtime worked
_____ B. Earnings amount divided by number of hours
_____ C. Year to Date regular earnings amount minus regular earnings amount for the period.

11. You decide to enroll in the company life insurance program. This means that $1.40 will be deducted from your check each week. How can you find your net pay for the week?

_____ A. Net pay amount minus $1.40
_____ B. Earnings amount minus $1.40
_____ C. Earnings amount divided by $1.40

12. Where will you find the amount of your check written on the check stub?

_____ A. The amount is the first one in the "Earnings" column.
_____ B. Nowhere. You have to add everything up yourself.
_____ C. The amount is located both in the net pay box and in the box headed "Amnt of check".

13. How can you find out the total number of hours you were paid for this week?

_____ A. Add up regular hours, D/S time, and holiday pay.
_____ B. Add up all the numbers in the "Hours" column.
_____ C. Subtract overtime hours from regular earnings hours, then add D/S time.

14. Which insurance option builds a cash value which you may choose to keep even if you leave the company?

_____ A. Life Cafeteria NTS
_____ B. Medical Cafeteria NTS
_____ C. Universal Life

15. Which holiday would NOT be eligible for holiday pay?

_____ A. Memorial Day
_____ B. Mother's Day
_____ C. Easter Monday

SECTION 3

Phase 3

PHASE 3

Phase three uses three components to integrate reading, math, communication, and other critical skills. The module is designed to help workplace educators respond well to time constraints.

Component one uses a pre-test to write an Individual Instruction Plan (IEP) to define basic math needs. Component two encourages cooperative learning groups to solve enrichment activities specific to the plant. Component three employs math, reading, organization, communication, public speaking, and a plethora of job related education skills to develop and produce a video presentation which addresses departmental education needs.

Phase three allows for better time management and a greater degree of productivity in the classroom. The video presentation is a classroom developed product which speaks directly to "the floor," perpetuating the working relationship between employees, managers, and instructors.

PLUS

People Leaping Upward to Success

A Mathematics Program for the Workplace

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Developed By
Jeanette L. Wood
WestPoint-Stevens
Clemson Plant
1993

People
Leaping
Upward
to Success

Mathematics and Measurement in the Workplace

ABOUT THE PROGRAM

Δ Objectives

- Δ to put classroom learning into practical application
- Δ to utilize the workplace as a functional learning lab
- Δ to provide employees with a sound educational background to help meet the demands of rapidly advancing technology

Δ Instructional Program

- Δ this program is designed to meet academic needs relating to mathematics with practical application in the workplace
- Δ an IEP (Individual Education Plan) will be developed for each student to teach/review basic skills in mathematics
- Δ student generated examples of math in the workplace will determine "math class" instruction
- Δ mathematical concepts will be integrated with reading skills, graphing/charting skills, business concepts, etc. whenever possible

Δ Primary Texts

Δ *Number Power* series
Contemporary Books, Inc.
180 North Michigan Avenue, Chicago, IL 60601

∆ Schedule

∆ our complete department specific course is:
seven weeks
two days/week
one and one half hours/class
for a total of 21 hours

∆ course breakdown:
3 weeks for communication, listening, and problem solving
4 weeks for math, reading, MSDS Program, and "Stubby"
that's about 4 hours for "math class"
!not a lot of time!

∆ A pessimist will say the schedule makes a good math program impossible.
An optimist will recognize tremendous potential for creative teaching.
And it is! How do we do it?
A.) **individualize** the math program
B.) **integrate** math with other critical subjects

∆ Curriculum

There are three major curriculum components:

∆ Component I: IEP (Individual Education Plan)
~ determined by results of pre-test

∆ Component II: Company Specific Applications for Math
~ reinforces math skills in context of company-wide interests

∆ Component III: Video Presentations
~ students explore and develop examples of department specific math skills for presentation

PRE- AND POST-TESTING

- **The PLUS Pre-test**
  - PLUS uses a non threatening name and objective to displace a little anxiety
    - its name: **PLUS Preview**
    - its objective: **to develop an individual study plan for the taker**
  - PLUS Preview corresponds to our primary math texts, *Number Powers 1 and 2*
  - to use the PLUS Preview most effectively
    - administer the first day of math class
    - use "Answers to the PLUS P/Review" to check promptly
    - transfer data to "PLUS IEP, Instructor" sheet
    - meet with student
      - show and explain instructor's copy of IEP to student
      - point out growth areas, using "Growth Area" sheet
      - discuss reasonable objectives with student (circle on instructor sheet)
      - student lists several objectives on student sheet
      - student signs agreement to complete listed objectives

- **The PLUS Post-test**
  - name and objective
    - its name: **PLUS Review**
    - its objective: **to help evaluate the math program**
  - record results on instructor's IEP sheet in appropriate column

People
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Upward
to Success

PLUS Preview

Name ______________________________

Department & Shift ______________________________

Date ______________________________

The PLUS Preview will be used to develop an individual study plan for YOU

Take your time to complete the PLUS Preview.
Try as many problems as you can.
Show your work.

1. In the number 2,049 the 0 is in the _____ place.

   a. hundredths
   b. hundreds
   c. tens
   d. thousands

2. 231 + 40 = _____.

3. 22,974 + 19,853 + 4,961 = _____.

4. 896 - 98 = _____.

5. 4,006 - 159 = _____

6. 3 x 3,201 = _____

7. 6,231 x 20 = _____

8. 225 x 96 = _____

9. 426 ÷ 2 = _____

10. 365 ÷ 7 = _____

11. A foot contains 12 inches. 3 inches is what fraction of a foot? (reduce your answer)

-----

12. Raise 3/5 to 20ths: _____

3/5 = ?/20

13. 1/9 + 2/9 = _____

14. 12 1/2 - 5 3/4 = _____

15. 2/3 x 1/4 = _____

16. 3/4 ÷ 1/4 = _____

17. Write 0.78 as a fraction. _____

18. Write 3/5 as a decimal. _____

19. Add 2.42 + .7 + 21. _____

20. 16 - 0.2 = _____

21. 21.2 x .45 = _____

22. 4.682 ÷ .2 = _____

23. 16 ÷ .4 = _____

24. Change .5 to a percent. _____

25. Change 35% to a decimal. _____

26. 90% of 6 is what? _____

27. If + means to multiply, and ÷ means to subtract, then

6 + 2 ÷ 11 = _____

28. The three basic metric units of measure are:

______________ ______________ ______________

29. Which is larger: one centimeter, or one millimeter? _____

30. Which of the following weighs closest to 1 kilogram?

a car? a book? a house? a penny?

People
Leaping
Upward
to Success

PLUS Review

Name ______________________________

Department & Shift ______________________________

Date ______________________________

The PLUS Review will be used to help evaluate the math program

Take your time to complete the PLUS Review.
Try as many problems as you can.
Show your work.

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3/5 = ?/20

13. 1/9 + 2/9 = _____

14. 12 1/2 - 5 3/4 = _____

15. 2/3 x 1/4 = _____

16. 3/4 ÷ 1/4 = _____

17. Write 0.78 as a fraction. _____

18. Write 3/5 as a decimal. _____

19. Add 2.42 + .7 + 21. _____

20. 16 - 0.2 = _____

21. 21.2 x .45 = _____

22. 4.682 ÷ .2 = _____

23. 16 ÷ .4 = _____

24. Change .5 to a percent. _____

25. Change 35% to a decimal. _____

26. 90% of 6 is what? _____

27. If + means to multiply, and ÷ means to subtract, then

6 + 2 ÷ 11 = _____

28. The three basic metric units of measure are:

_____________ _____________ _____________

29. Which is larger: one centimeter, or one millimeter? _____

30. Which of the following weighs closest to 1 kilogram?

a car? a book? a house? a penny?

Answers to the P/Review

1 b
2 271
3 47,788
4 798
5 3,847

6 9,603
7 124,620
8 21,600
9 213
10 52r1

11 3/12 = 1/4
12 12
13 3/9 = 1/3
14 6 3/4
15 1/6

16 3
17 78/100
18 0.6
19 24.12
20 15.8

21 9.54
22 23.41
23 40
24 50%
25 0.35

26 5.4
27 1
28 meter, liter, gram
29 centimeter
30 book

People
Leaping
Upward
to Success

PLUS IEP
Individual Education Plan
Instructor Copy

Preview	Growth Area	Number Power Book #	Pages	Applications for Math Enrichment	Review
1	place value	1	1, 2	B, C	1
2	+ whole #s	1	8	D	2
3	+ whole #s	1	10, 11	D	3
4	- whole #s	1	24, 26, 28	E	4
5	- whole #s	1	32, 34	E	5
6	x whole #s	1	49	F	6
7	x whole #s	1	50	F	7
8	x whole #s	1	54, 56	F	8
9	÷ whole #s	1	71, 72, 73	G	9
10	÷ whole #s	1	76, 77, 80, 81	G	
11	fractions	2	5, 6, 8, 9	-	11
12	fractions	2	10	-	12
13	+ fractions	2	13, 16, 19	H	13
14	- fractions	2	21, 22, 25	I	14
15	x fractions	2	28, 29, 32	J	15
16	÷ fractions	2	34, 35, 40	K	16
17	decimal to fraction	2	50, 51, 52	-	17
18	fraction to decimal	2	50, 51, 53	-	18
19	+ decimals	2	55	L	19
20	- decimals	2	57	M	20
21	x decimals	2	59, 62	N	21
22	÷ decimals	2	65	O	22
23	÷ decimals	2	67	O	23
24	decimal to %	2	76	-	24
25	% to decimal	2	77	-	25
26	percents	2	81, 85	-	26
27	directions		directions exercise in class		27
28	measurement		measurement materials		28
29	measurement		measurement materials		29
30	measurement		measurement materials		30

_______ Raw Score Preview

_______ Raw Score Review

BY THE END OF CLASS, I WILL IMPROVE _____ GROWTH AREAS.

SIGNATURE ________________________________ DATE __________

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GROWTH AREAS
for the student
Individual Education Plan

OBJECTIVES: I WILL LEARN MORE ABOUT	USING NUMBER POWER BOOK NUMBER	PAGES	and	JOB SPECIFIC APPLICATIONS FOR MATH

BY THE END OF CLASS, I WILL IMPROVE _____ GROWTH AREAS.

SIGNATURE ______________________________ DATE ________________

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An example is provided
to show you
how to use "PLUS" assessment materials
in your classroom.

The example includes:
- ex. student "Review"
- ex. Instructor IEP
- ex. Student IEP (Growth Areas)

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PLUS Preview

Name Sample

Department & Shift Finishing - 1st

Date XX - XX - XX

The PLUS Preview will be used to develop an individual study plan for YOU

Take your time to complete the PLUS Preview. Try as many problems as you can. Show your work.

1. In the number 2,049 the 0 is in the a place.

   a. hundredths
   b. hundreds
   c. tens
   d. thousands

2. 231 + 40 = 271.

   231
   +40
   271

3. 22,974 + 19,853 + 4,961 = 45,788

   1 2 1
   22,974
   19,853
   4,961
   45,788

4. 896 - 98 = 748.

   7 8
   896
   -98
   748

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5. 4,006 - 159 = 3,957

4,006
- 159
3,957

6. 3 x 3,201 = 9,603

3,201
x 3
9603

7. 6,231 x 20 = 124,620

6,231
20
12,4620

8. 225 x 96 = 21,600

2 3 4
225
x 96
1350
2025
21,600

9. 426 ÷ 2 = 213

10. 365 ÷ 7 = 52 r 1

52 r 1
7)365
35
15
14
1

11. A foot contains 12 inches. 3 inches is what fraction of a foot? (reduce your answer)

3/12 = 1/4

12. Raise 3/5 to 20ths: ____

3/5 = ?/20

13. 1/9 + 2/9 = $\frac{3}{18}$

14. 12 1/2 - 5 3/4 = $7\frac{1}{4}$

$$\begin{array}{r} 12\frac{2}{4} \\ -5\frac{3}{4} \\ \hline 7\frac{1}{4} \end{array}$$

15. 2/3 x 1/4 = $\frac{1}{6}$

$\frac{2}{3} \times \frac{1}{4} = \frac{2}{12} = \frac{1}{6}$

16. 3/4 ÷ 1/4 = 3

$= \frac{3}{1} = 3$

17. Write 0.78 as a fraction. [illegible]

18. Write 3/5 as a decimal. [illegible]

19. Add 2.42 + .7 + 21. [illegible]

$$\begin{array}{r} 2.42 \\ .7 \\ 21 \\ \hline 24.12 \end{array}$$

20. 16 - 0.2 = 15.8

21. 21.2 x .45 = 95.4

BEST COPY AVAILABLE

SAMPLE

People
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Upward
to **S**uccess

GROWTH AREAS
for the student
Individual Education Plan

OBJECTIVES: I WILL LEARN MORE ABOUT	USING NUMBER POWER BOOK NUMBER	PAGES	and JOB SPECIFIC APPLICATIONS FOR MATH
① Place Value	1	1+2	B+C
② Addition of Whole Nos	1	10+11	D
③ Subtraction, Whole Nos.	1	32+34	E
④ Fractions	2	10	
⑤ Addition, Fractions	2	13, 16, + 19	H
⑥ Subtraction, Fractions	2	21, 22, + 25	I
⑦ Changing Decimals to Fractions	2	50, 51, + 52	

BY THE END OF CLASS, I WILL IMPROVE ~~10~~ 7 GROWTH AREAS.

SIGNATURE Sample Student DATE 10/1/93

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COMPONENT II

PLANT SPECIFIC APPLICATIONS FOR MATH

Plant Specific Applications for Math

Place Value I

- **Last week, Inspection frame #3 ran 1,404,000 yards of cloth.**
  Read 1,404,000
  (one million, four hundred four thousand)
- **Mr. and Mrs. Jane and Levi Garrison both work in the shop. Their combined gross income is $39,655.00.**
  Read 39,655.00.
  (thirty-nine thousand, six hundred fifty-five)
- **About 568 miles of fabric, enough to reach from Greenville to Washington D.C., are produced at WestPoint Pepperell's Clemson Plant each week.**
  Read 568.
  (five hundred sixty-eight)
- **Approximately 2,500 people are employed at our Clemson complex.**
  Read 2,500.
  (two thousand, five hundred)
- **The Clemson Plant can produce 1,200,000 sets of sheets and pillowcases each week.**
  Read 1,200,000.
  (one million, two hundred thousand)
- **At the end of 1992, WestPoint held a $336,000,000 debt.**
  Read 336,000,000.
  (three hundred thirty-six million)
- **WestPoint Pepperell is the top manufacturer of sheets in the U.S., producing 33% of all U.S. manufactured sheets.**
  Read 33.
  (thirty-three)
- **Employees who get their GED receive a $100 savings bond from the company.**
  Read 100
  (one hundred)

Helpful information about place value is located in
Jerry Howett, Number Power 1, Contemporary 1988 pp. 1-2

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WestPoint Pepperell Plant
Clemson, South Carolina 1993

Plant Specific Applications for Math

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  Read 2.500.

- **The Clemson Plant can produce 1,200,000 sets of sheets and pillowcases each week.**
  Read 1.200.000.

- **At the end of 1992, WestPoint held a $336,000,000 debt.**
  Read 336.000.000.

- **WestPoint Pepperell is the top manufacturer of sheets in the U.S., producing 33% of all U.S. manufactured sheets.**
  Read 33.

- **Employees who get their GED receive a $100 savings bond from the company.**
  Read 100.

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Jerry Howett, Number Power 1, Contemporary, 1988, pp. 1-2.

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Plant Specific Applications for Math

Place Value II

- **Alamance recently topped their record for safe employee hours. Their new record is three million, six hundred fifty thousand safe employee hours.**
  Write the numbers that represent three million, six hundred fifty thousand.
  (3,650,000)

- **Altogether, WestPoint Plants produce over four million yards of material each week, enough to cover one lane to California.**
  Write the numbers that represent four million.
  (4,000,000)

- **In August, thirty-nine thousand, four hundred sixty eight yards of cloth were shipped to Alamance.**
  Write the numbers that represent thirty-nine thousand, four hundred sixty eight.
  (39,468)

- **Some two thousand, five hundred people are employed at the Clemson WestPoint Pepperell complex.**
  Write the numbers that represent two thousand, five hundred.
  (2,500)

- **At a recent meeting, a Department Manager reported a twelve thousand, nine hundred eleven yard increase over last week's production in her department.**
  Write the numbers that represent twelve thousand, nine hundred eleven.
  (12,911)

Helpful information about place value is located in:
Jerry Howett, Number Power 1, Contemporary, 1988, pp. 1-2.

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Plant Specific Applications for Math

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Plant Specific Applications for Math

Addition of Whole Numbers

- **WestPoint is the No. 2 producer of towels in the U.S., producing 30% of all U.S. manufactured towels. Fieldcrest Cannon is the top producer, with 43%. Together, these two companies produce _____ % of all towels made in the U.S.**
  Fill in the blank.
  (73%)

- **At this complex, about 500 people work in the Finishing Plant and about 500 people work in the Greige Plant. About _____ people are employed in our Greige and Finishing Plants.**
  Fill in the blank.
  (about 1000 people)

- **Last Monday, 11,342 yards of cloth were shipped to Alamance. The next day, 11,653 yards were shipped to Alamance. Nothing was shipped to them the rest of the week. How many yards total were shipped to Alamance Plant last week?**
  (22,995 yards)

- **Waste is weighed at the end of each day. Today, there are two cans. A first can contains 43 pounds of waste. A second can contains 16 pounds of waste. What is the total amount of waste today?**
  (59 pounds)

- **Monday and Tuesday, I worked 8 hours, Wednesday, I worked 7 hours, Thursday, I worked 10 hours, and Friday, I worked 9 hours. How many hours did I work this week?**
  (8+8+7+10+9=42)

- **Yesterday, production in my department was 112,990 yards. Today's production totaled 160,853 yards. What was the total production yesterday and today in my department?**
  (273,843 yards)

Helpful information about addition of whole numbers is located in:
Jerry Howett, Number Power 1, Contemporary, 1988, pp. 6-17.

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Jerry Howett, Number Power 1, Contemporary 1986 pp. 6-17

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Plant Specific Applications for Math

Subtraction of Whole Numbers

- **If Tyrone, in Shipping, had 17 boxes to ship and all but 8 were shipped, how many would still be left?**
  (8—all but 8 were shipped!)

- **How does cost affect profit? A recent WestPoint Pepperell circular states, "If we could reduce cost by 5%, our profit would increase by 73% from $62,010,000 to $107,533,000." How much (in dollars) of a profit increase is that?**
  Answer, using subtraction.
  ($45,523,000)
  Read the number, $62,010,000.
  (sixty-two million, ten thousand dollars)

- **Travis is making a brace for the Combo Range. He has a piece of metal that is 49 cm long. He needs the piece to be 35 cm long. How many cm does Travis need to cut from the metal piece?**
  (14cm)

- **Teresa recently ordered 2,594 widgets for Finishing Department. Only 1,995 were delivered. How many parts are on backorder?**
  (599 were on back order)

- **James McGlon, WestPoint Pepperell's oldest living member of the Fifty Year Club, says he was nine years old when he first went to work in 1906. How old is he now?**
  (96 years old)

- **97,572 yds of "Tambourine" were run. Of these, 5,992 yds were second quality. How many yards were first quality?**
  (91,580)

Helpful information about subtraction of whole numbers is located in:
Jerry Howett, Number Power 1, Contemporary, 1988, pp. 22-40.

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Clemson, South Carolina 1993

Plant Specific Applications for Math

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  Answer, using subtraction.

  Read the number, $62.010.000.

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Plant Specific Applications for Math

Multiplication of Whole Numbers

- According to the National Association of Manufacturers, the average manufacturing company must invest about $12,000 in tools and supplies for each person it employs. Our finishing plant employs about 500 people. Use the figures above to figure out about how much money is invested in tools and supplies for 500 employees.
  (about $ 6,000,000)

- Kenneth used eighteen bolts to put together one A-frame. How many bolts will he use if he puts together 15 A-frames?
  (270 bolts)

- Production in Harold's department averages 479,500 yds/day. Some experts say that we should expect production in that department to triple during the next decade, due to breakthroughs in technology. If the experts are right, Harold's department may produce as many as _____ yds/day within the next decade.
  Fill in the blank.
  (1,438,500)

- Curtis puts 70 pounds of black dye into each mix tank of *Indigo*. for two mix tanks, he will use a total of _____ pounds of black dye.
  Fill in the blank.
  (140)

- If there are 11 rolls in a truckload and there are 2,500 yards on each roll, how many yards are on the truck?
  (27,500 yards)

- If a finishing plant has 20 departments and 25 people work in each department, how many people work in the whole plant?
  (500 people)

Helpful information about multiplication of whole numbers is found in:
Jerry Howett, Number Power 1, Contemporary 1988 pp 46-65

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WestPoint Pepperell Plant
Clemson, South Carolina 1993

Plant Specific Applications for Math

Multiplication of Whole Numbers

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  Fill in the blank.

- Curtis puts 70 pounds of black dye into each mix tank of *Indigo*. for two mix tanks, he will use a total of _____ pounds of black dye.
  Fill in the blank.

- If there are 11 rolls in a truckload and there are 2,500 yards on each roll, how many yards are on the truck?

- If a finishing plant has 20 departments and 25 people work in each department, how many people work in the whole plant?

Helpful information about multiplication of whole numbers is found in:
Jerry Howett, Number Power 1, Contemporary, 1988, pp. 48-65.

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Clemson, South Carolina 1993

Plant Specific Applications for Math

Division of Whole Numbers

- **Machine #4 runs an average of 14,075 yards of cloth in one hour. On the average, how many yards per minute does machine #4 run?**
  (approximately 235 yds/min)

- **Jacki spent one hour keying in pattern measurements into a computer. During that hour, she entered measurements for 30 patterns. If there are a total of 1,964 patterns that need to be entered, about how many hours should Jacki plan to finish the job?**
  (approximately 65 hours)

- **A machine runs an average of 10,050 yards per hour.**
  About how many hours are needed to run 60,300 yards of cloth?_____
  Can this be done in one shift?________________________________
  (6 hours; yes)

- **If our plant received a $32,900.00 bonus and wanted to divide it evenly among 7 departments, how much would go to each department?**
  ($4,700.00 each)

- **Juanita, a student in The Learning Center, earns $6.00/hr regular pay. She gets paid one hour for every three she spends in the classroom after regular working hours. How much will she get paid for spending twelve hours in class?**
  ($24.00)

Helpful information about division of whole numbers is found in:
Jerry Howett, Number Power 1, Contemporary 1988 pp 71-98.

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WestPoint Pepperell Plant
Clemson, South Carolina 1993

Plant Specific Applications for Math

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- Jacki spent one hour keying in pattern measurements into a computer. During that hour, she entered measurements for 30 patterns. If there are a total of 1,964 patterns that need to be entered, about how many hours should Jacki plan to finish the job?

- A machine runs an average of 10,050 yards per hour.
  About how many hours are needed to run 60,300 yards of cloth?_____
  Can this be done in one shift?______________________________

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Jerry Howett, Number Power 1, Contemporary, 1988, pp. 71-98.

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Plant Specific Applications for Math

Addition of Fractions

- Clyde's section leader wants to know how many total hours he spent working on the combo range last week. He worked 2 3/4 hours on Monday, 4 1/2 hours on Tuesday, 3 1/4 hours on Wednesday, and 5 3/4 hours on Thursday. How many hours did Clyde work on the combo last week?
  (Clyde worked 16 1/4 hours on the combo range last week)

- Maintenance is building a new office between Customer Service and the computer room. The rectangular room will be 18 3/4 feet long and 12 1/8 feet wide. Nancy uses math to figure out how much molding she needs to go around the ceiling. Find the distance around the room to see how much molding Nancy needs.
  (Nancy needs 61 3/4 feet of molding)

- A job calls for two gallons of "Putty" paint. Jerry found 4 cans left over from other jobs that had some paint in them. One contained 1/4 gal., one contained 2/3 gal., one contained 1/2 gal.,, and one contained 9/10 gal.
  Did Jerry have enough paint to do the job?____________________
  If the answer was no, how much more did he need?________________
  (yes; na)

- Bill needs three pieces of pipe. One should be 2 5/8 in. long, one should be 7 9/16 in. long, and the other should be 3 1/4 in. long. How much pipe is that in all?
  (that's 13 7/16 inches of pipe)

- This week, 7/8 of the people from bleach department made production and 7/8 of the people from inspection made production. What fraction of people from both bleach and inspection made production?
  (7/8 of the people made production)

Helpful information about addition of fractions is located in
Jerry Howett, Number Power 2, Contemporary 1986 pp 5-2

PLUS is developed by
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WestPoint Pepperell Plant
Clemson, South Carolina 1993

Plant Specific Applications for Math

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  If the answer was no, how much more did he need?______________

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Helpful information about addition of fractions is located in:
Jerry Howett, Number Power 2, Contemporary, 1988, pp. 5-20.

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Plant Specific Applications for Math

Subtraction of Fractions

- Machine #2 was down from 9:00-10:30 am and again from 2:15-3:00 pm yesterday.
  How long, in hrs. and mins., was machine #2 down yesterday?______
  9:00-10:30 is equal to what fraction of an hour? 3/4? 1 1/2? 1 3/4?
  Write, in fraction form, the total number of hours machine #2 was down yesterday.________________________________
  How many hours, in fraction form, did Machine #2 run during first shift yesterday?________________________________
  (#2 was down 2 hours and 15 minutes; 9:00-10:15=1 1/4 hours; #2 was down 2 1/4 hours; #2 ran a total of 5 3/4 hours during 1st shift yesterday)

- Sam cut 7/8 in from a 9 1/2 in pipe. What is the new length of the pipe?
  (the new length is 8 5/8 in.)

- Ray needs two boards each that are 3 5/16 ft long. He cuts them from a 7 ft long stud.
  What is the total length of board he will cut for BOTH BOARDS? ___
  How much is left from the original stud after the second board is cut?________________________________
  (the total length of wood needed for two 3 5/16 foot boards is 6 5/8 feet; 3/8 feet of the original piece will remain after the two boards are cut)

- During a certain time period, Clemson greige produced 1/2 million yards of cloth. Seneca produced 20,000 yards less than Clemson.
  Write the number for 1/2 million.________________________
  How many yards of cloth did the Seneca greige plant produce?________
  (1/2 million is written 500,000; Seneca produced 480,000 yards of cloth)

- Keith mixed a 300 gallon tank of dye.
  If 19 1/2 gallons were used, how much is left?________________
  If 28 1/4 gallons are left, how much was used?________________
  (is 19 1/2 gals. were used, then 280 1/2 gals. are left; if 28 1/2 gals. are left, then 271 3/4 gals. were used)

Helpful information about subtraction of fractions is located in:
Jerry Howett, Number Power 2, Contemporary, 1988, pp. 21-27.

PLUS is developed by
Jeanette L. Wood
WestPoint Pepperell Plant
Clemson, South Carolina 1993

Plant Specific Applications for Math

Subtraction of Fractions

- Machine #2 was down from 9:00-10:30 am and again from 2:15-3:00 pm yesterday.
  How long, in hrs. and mins., was machine #2 down yesterday?______
  9:00-10:30 is equal to what fraction of an hour? 3/4? 1 1/2? 1 3/4?
  Write, in fraction form, the total number of hours machine #2 was down yesterday.______________________________
  How many hours, in fraction form, did Machine #2 run during first shift yesterday?______________________________

- Sam cut 7/8 in from a 9 1/2 in pipe. What is the new length of the pipe?

- Ray needs two boards each that are 3 5/16 ft long. He cuts them from a 7 ft long stud.
  What is the total length of board he will cut for BOTH BOARDS? ___
  How much is left from the original stud after the second board is cut?______________________________

- During a certain time period, Clemson greige produced 1/2 million yards of cloth. Seneca produced 20,000 yards less than Clemson.
  Write the number for 1/2 million.______________________
  How many yards of cloth did the Seneca greige plant produce?________

- Keith mixed a 300 gallon tank of dye.
  If 19 1/2 gallons were used, how much is left?__________________
  If 28 1/4 gallons are left, how much was used?________________

Helpful information about subtraction of fractions is located in:
Jerry Howett, Number Power 2, Contemporary 1986 pp. 21-27.

PLUS is developed by
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WestPoint Pepperell Plant
Clemson, South Carolina 1993

Plant Specific Applications for Math

Multiplication of Fractions

- **Inspection frame #4 runs about 120 1/4 yards per minute.**
  About how many yards should #4 run in 54 minutes?____________
  About how many yards should #4 run in 2 1/2 hours?____________

  #4 actually runs about 6 3/4 hours during an 8 hour shift.
  About how many yards should #4 run during 2nd shift?____________
  (6,493 1/2 yards in 54 minutes; 18,037 1/2 yards in 2 1/2 hours; 48,701 1/4 yards during 2nd shift)

- **Sheryl ran 1/4 of a 2,500 yard roll.**
  How many yards of cloth did she run?____________
  How many yards are left on the roll?____________
  (she ran 625 yards; 1,875 yards are left on the roll)

- **Jim is ordering new tile for a computer room. The room is a perfect square and the length of one side is 12 1/2 feet. Jim will find the area of the room by multiplying the length times the width to find out how many square feet of tile he needs to order.**
  What do we know about the sides of a square?____________
  What is the length of the room?____________
  What is the width of the room?____________
  How does Jim find the area?____________
  How many square feet of tile will Jim order?____________
  (the sides of a square are equal; length = 12 1/2 ft.; width = 12 1/2 ft.; A = l x w; Jim needs to order 156 1/4 sq.ft. of tile)

- **Let's say that a department is having a bad week and about 1/16 of all yards run are second quality.**
  If 80,000 yards of "Colors" are run, how many yards would you expect to be second quality?____________
  If 4,100 yards of "Gypsy Dance" are run, how many yards would you expect to be first quality?____________
  (5,000 yards would be second quality; 3,843 3/4 yards would be first quality)

Helpful information about multiplication of fractions is located in:
Jerry Howett, Number Power 2, Contemporary, 1988, pp. 28-33.

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Plant Specific Applications for Math

Multiplication of Fractions

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  About how many yards should #4 run in 54 minutes?____________
  About how many yards should #4 run in 2 1/2 hours?____________

  #4 actually runs about 6 3/4 hours during an 8 hour shift.
  About how many yards should #4 run during 2nd shift?____________

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  How many yards of cloth did she run?____________________
  How many yards are left on the roll?____________________

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  What is the length of the room?____________________
  What is the width of the room?____________________
  How does Jim find the area?________________________
  How many square feet of tile will Jim order?________________

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  If 4,100 yards of "Gypsy Dance" are run, how many yards would you expect to be first quality?____________________

Helpful information about multiplication of fractions is located in
Jerry Howett, Number Power 2, Contemporary, 1988 pp 28-33

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Plant Specific Applications for Math

Division of Fractions

- Rick has a piece of pipe 3 7/8 m long. He needs 6 pieces, each 7/16 m. How much pipe would Rick need for 7 pieces of pipe 7/16 m long?

  ____

  Can he cut them all from this one piece of pipe? __________

  If yes, how much would be left over? __________

  If no, how much longer would the original pipe need to be? __________

  (he would need a piece 2 5/8 m long; yes; 1 1/4 m left over)

- In a five-day week, Steve spends 7 1/2 hours oiling machines.

  If Steve spends the same amount of time each day oiling, how much time per day does he spend oiling machines? __________

  If he only oils twice each week and spends the same amount of time each time he oils, how much time does he spend each day oiling machines? __________

  What fraction of a 40 hour week does Steve spend oiling machines? __________

  (1 1/2 hours/day in a five day week; 3 3/4 hours/day in a two day week; 7 1/2 out of forty = 3/16)

- Charlie found two rolls of wire. One has 17 1/3 ft. on it and the other has 4 2/3 ft. on it.

  Zero needs five pieces of wire, each 4 1/3 ft. long. Can he get them from these two rolls? __________

  If yes, how much will be left over? __________

  If no, how much more is needed? __________

  (yes; 1/3 ft. on the smaller roll and none on the bigger roll; na)

- Billy asked Frank to cut a piece of sheet metal in half. If the original piece is 4 3/4 meters long, how long will each of the pieces be after the metal is cut? __________

  (2 3/8 m each)

Helpful information about division of fractions is located in:
Jerry Howett, Number Power 2, Contemporary, 1988, pp. 34-42.

PLUS is developed by
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WestPoint Pepperell Plant
Clemson, South Carolina 1993

Plant Specific Applications for Math

Division of Fractions

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  ____
  Can he cut them all from this one piece of pipe?__________
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Clemson, South Carolina 1993

Plant Specific Applications for Math

Addition of Decimals

- Keith and Doris mixed 60.25 gallons of green dye, 40 gallons of red dye, and 49.75 gallons of blue dye.
  How many gallons were in the total mixture?____________________
  After looking at color samples, the lab requested that 10 gallons of green be added to the mixture above. How many gallons of dye are in the new mixture?______________________________
  (150 gallons; 160 gallons)

- Ruth welded together 3 pieces of pipe that were 21.6 cm, 38.4 cm, and 10.3 cm long. What is the total length of the new pipe made from all three parts? ______________________________
  (70.3 cm)

- The temperature in a mix tank went up 4.8°C. If the beginning temperature was 89.2°C, what was the temperature after the increase?______________________________
  (94°C)

- For safety reasons, an enclosure has to be built around one of the machines. In deciding how to build the enclosure, Kevin considers the Perimeter, the distance around, the machine. To find the distance around the rectangular shaped machine, Kevin adds together the measurements of each side. These are the measurements: 5.75 m, 3.25 m, 7.5 m, 1 m, 1.75 m, and 2.25 m.
  How can you figure out the definition of 'perimeter' if you don't already know?______________________________
  What is the perimeter of the machine area described above?__________
  (find the definition in context. 21.5)

Helpful information about addition of decimals is located in:
Jerry Howett, Number Power 2, Contemporary 1988 pp. 55-56.

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Clemson, South Carolina 1993

Plant Specific Applications for Math

Addition of Decimals

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  How can you figure out the definition of 'perimeter' if you don't already know?______________________________
  What is the perimeter of the machine area described above?__________

Helpful information about addition of decimals is located in:
Jerry Howett, Number Power 2, Contemporary, 1988, pp. 55-56.

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Clemson, South Carolina 1993

Plant Specific Applications for Math

Subtraction of Decimals

- When the air conditioner went out, the temperature in print department rose from 75.6°F to 95.2°F while the temperature in inspection rose from 71.3°F to 88.1°F.
  How much did the temperature rise in print?__________________
  How much did the temperature rise in inspection?______________
  Which department experienced the greatest increase in temperature?____
  (19.6°F; 16.8°F; print)

- The estimate closest to 45.04 + 16.68 is:
  a. 60 b. 61 c. 62 d. 63
  (c. 62)

- In July, 1993, a new shaft on the Zimmer measured 8.73 cm. In July, 1994, the same shaft measured 8.53 cm.
  Why do think the diameter changed?__________________________
  How much did the diameter shrink?___________________________
  (heavy wear; 0.2 cm)

- Clemson Fabrication Plant earned a 98.44% on its 1992 safety audit; and a 97.3% on its 1991 audit.
  Alamance Plant earned a 99.46% on its 1992 safety audit.
  What did Clemson Fabrication earn on its 1992 audit?______________
  What did Alamance Plant earn on its 1992 audit?_________________
  Find the difference between Fab's score and Alamance's score.________
  Which plant received a higher rating in 1992?___________________
  How much did Clemson Fab improve their safety rating from 1991 to 1992?______________________________________
  How much would Fab need to improve their 1992 rating to receive a 99.4% rating in 1993?______________________________
  (98.44%; 99.46%; 1.02%; Alamance; 1.14%; 0.96%)

Helpful information about subtraction of decimals is located in:
Jerry Howett, Number Power 2, Contemporary, 1988, pp. 57-58.

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Clemson, South Carolina 1993

Plant Specific Applications for Math

Subtraction of Decimals

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  How much did the temperature rise in print?____________________
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  What did Clemson Fabrication earn on its 1992 audit?______________
  What did Alamance Plant earn on its 1992 audit?__________________
  Find the difference between Fab's score and Alamance's score._______
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Plant Specific Applications for Math
Multiplication of Decimals

- One inch is equal to 2.54 centimeters.
  Jill measured the width of a door, and found it was 76.2 ?? wide. She forgot whether it was inches or centimeters. Which is more reasonable?__________
  How many centimeters are there in 4.5 inches?__________
  How many centimeters are there in 11.25 inches?__________
  How many centimeters are there in 1.75 inches?__________
  How many centimeters are there in 8 3/4 inches?__________
  (cm is more reasonable...76.2 inches is more than 6 ft!; 11.43 cm; 28.575 cm; 4.445 cm; 22.225 cm)

- Frankie makes $7.11/hr.
  If he works 44 hours, how much will he make?__________
  How much will he make is he works 39.5 hours?__________
  How much does he make for working 6 hours at time-and-a-half? __________
  How much will Frankie make per hour if he gets a .25 raise?__________
  ($312.84; $280.85; $63.99; $7.36)

- Donnie needs to put three machines, side by side, in a space that is 7 1/2 feet wide. Each of the machines is 29.2 inches wide.
  How many inches are in 7 1/2 feet?__________
  How wide will the three machines be when they are placed side by side?__________
  Will they fit?__________
  (90 inches; 87.6 inches; yes)

- A piece of lumber that is 2 inches thick and 4 inches wide when it is cut is called a '2x4.' Lumber shrinks after it is cut, so it is only 1.5 inches thick and 3.5 inches wide by the time it is used.
  Ken is using '2x4s' to make pallets. Each pallet will be 5 1/4 feet by 3 1/2 feet. Design two ways Ken could align his '2x4s' on the top of pallet. Discuss how many boards are placed together to complete the width, and the length of each board. Which is more efficient? Why?
  (18 boards, side by side, each 3 1/2 feet long; OR 12 boards side by side, each 5 1/4 feet long; the one with 12 boards is more efficient; the fewer the boards, the fewer the cuts)

Helpful information about multiplication of fractions is located in:
Jerry Howett, Number Power 2, Contemporary 1993 pp 59-63.

PLUS is developed by
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Clemson, South Carolina 1993

Plant Specific Applications for Math

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  How many inches are in 7 1/2 feet? ____________________
  How wide will the three machines be when they are placed side by side?____________________
  Will they fit?____________________

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Helpful information about multiplication of fractions is located in
Jerry Howett, Number Power 2, Contemporary, [illegible]

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Clemson, South Carolina 1993

Plant Specific Applications for Math

Division of Decimals

- **Brad's machine ran 20,790 yards of cloth in 2.75 hours.**
  How many minutes are in 2.75 hours?________________________
  How many yds/min did the machine run during this time period?____
  (165 minutes; 126 yds/ min)

- **2.54 centimeters equal 1 inch.**
  9 centimeters equal how many inches?__________________________
  How many inches equal 3 3/4 centimeters?__________________________
  Round your answer to the nearest hundredth, two decimal places.
  (3.54 in; 3.25 in; 1.48 in)

- **John, in Bleach, started his shift at 8:00 am yesterday. His machine ran good for 2.25 hours, until was an electrical problem that caused a forty-five minute delay. When the electrical problem was fixed, he ran for 3.5 hours more; then a breakout occurred that took 30 minutes to fix. After the breakout, the machine ran fine for the rest of the shift.**
  ***How many hours are in a regular shift?__________________________**
  How many minutes are in a regular shift?________________________
  How many hours of downtime did John have?_______________________
  How many minutes of downtime did John have?______________________
  ***How many minutes did the machine run?__________________________**
  (8 hours; 480 minutes; 1.25 or 1 1/4 hours downtime; 75 minutes; 405 minutes)

Here's how John finds his production efficiency:
He divides the number of minutes the machine actually ran by the number of minutes in a shift...that's the number of minutes in a shift divided into the number of minutes the machine ran.
Calculate John's production efficiency for that day. Carry out to the thousandths place, three decimal places.__________________________
Now, round off to the hundredths place.____________________________
To change the answer to a percent, move the decimal 2 places to the right and add a percent sign (%).________________________________
(0.843; 0.84; 84.% or 84%)

Helpful information about division of decimals is located in
Jerry Howett, Number Power 2, Contemporary, [illegible]

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Clemson, South Carolina 1993

Plant Specific Applications for Math

Division of Decimals

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  How many minutes are in 2.75 hours?______________
  How many yds/min did the machine run during this time period?______________

- 2.54 centimeters equal 1 inch.
  9 centimeters equal how many inches?______________
  How many inches equal 3 3/4 centimeters?______________
  Round your answer to the nearest hundredth, two decimal places.

- John, in Bleach, started his shift at 8:00 am yesterday. His machine ran good for 2.25 hours, until was an electrical problem that caused a forty-five minute delay. When the electrical problem was fixed, he ran for 3.5 hours more; then a breakout occurred that took 30 minutes to fix. After the breakout, the machine ran fine for the rest of the shift.
  *How many hours are in a regular shift?______________
  How many minutes are in a regular shift?______________
  How many hours of downtime did John have?______________
  How many minutes of downtime did John have?______________
  *How many minutes did the machine run?______________

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He divides the number of minutes the machine actually ran by the number of minutes in a shift...that's the number of minutes in a shift divided into the number of minutes the machine ran.

Calculate John's production efficiency for that day. Carry out to the thousandths place, three decimal places.______________

Now, round off to the hundredths place.______________

To change the answer to a percent, move the decimal 2 places to the right and add a percent sign (%).______________

Helpful information about division of decimals is located in:
Jerry Howett, Number Power 2, Contemporary, 1988, pp. 64-69.

PLUS is developed by
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Clemson, South Carolina 1993

COMPONENT III

Student
Video
Presentations

Arithmetic Test

Objective:

To demonstrate that people don't always read or follow even simple, written directions.

Procedure:

As shown on the following page, this is a one-page "test." Preface your instructions by commenting that the test is a very simple one involving easy addition, subtraction, multiplication, and division problems. Pass the papers out face down. Then state, "As soon as I say 'Go', turn your papers over and work as fast as you possibly can. As soon as you finish, turn your papers back over, and raise your right hand in the air. Ready - Set - Go!"

Make certain your instructions are given hurriedly and allow no time for questions. Give the impression that time is very tight and they must rush this assignment. Allow only around 30 seconds, and then interrupt, saying, "OK, I see most of you are finished, so let's check our answers." Pause. "The answer to number 1, of course, is what?" (Note: Experience indicates that at least half of the audience will respond.) Acknowledge that "10" is correct, even though one or two people will correctly give the answer as "16."

Continue, "OK, the answer to number 2 is what?" After one or two more responses, demonstrate that there are different answers and ask the group, "Did you all get the same sheet?" Then let the group itself discover their problem by reading the directions to themselves.

Discussion Questions:

1. Remember the saying, "If all else fails, read the directions"? Why didn't we do so here? (Pressed for time; saw familiar problems)
2. Have you ever seen incidents where poorly given or rushed instructions may be worse than none at all?
3. Did anyone experience group pressure when you began to start this exercise? What effects did this have on your performance?

Materials Required:

Test sheet (see following page

Approximate Time Required: 5-10 minutes

Source: Unknown

Arithmetic Test

In the following simple arithmetic problems, a plus (+) sign means to multiply, a divide (÷) sign means to add, a minus (-) sign means to divide, and a times (x) sign means to subtract. Complete the problems following these directions.

8 + 2 =
9 + 11 =
4 x 3 =
6 ÷ 2 =
9 - 3 =
7 x 4 =
4 + 4 =
8 - 4 =
12 x 2 =
20 - 10 =
9 - 1 =
5 + 6 =
2 x 1 =
10 - 5 =
12 + 2 =
6 ÷ 6 =
8 + 5 =
6 + 6 =
17 x 2 =
14 ÷ 7 =

14 - 7 =
6 x 5 =
8 + 3 =
7 x 2 =
9 + 2 =
8 - 4 =
9 + 6 =
1 ÷ 1 =
8 x 7 =
13 - 1 =
16 - 4 =
8 x 2 =
9 ÷ 9 =
6 x 2 =
8 + 4 =
10 - 2 =
4 - 1 =
18 - 3 =
8 + 2 =
15 x 3 =

!Excite the Learners!

The most effective way to excite the adult learner is to ***stimulate his own experiences*** *relating to the concept at hand, in this case, math. First, it is important to* ***learn his experiences.*** *Then,* ***use them to establish a clear purpose for learning.***

!Learn Their Experiences!

"Math and Business" *(next page) is a vehicle we use to* ***help students list math-related experiences from their own lives.***

Following "Math and Business," you will find a webbed diagram called ***"Ways We Use Math at Work and Home."*** *This type of diagram helps the instructor to easily* ***position the learner's stated experiences as his purpose for learning math.***

!Use Their Experiences!

how to use the suggested materials

Math and Business

- *explain the purpose: to make learning relevant and worthwhile!*
- *explain the directions*
- *review the meaning of each skill word with the entire class*
- *students complete worksheet (individuals, pairs, groups ok!)*
  «move right into "Ways We Use Math..." »

Ways We Use Math at Work and Home

- *discuss all responses to "Math and Business" in class*
- *make a class list of top 15 -20 responses, uncensored*
- *use these to create a web (see sample) on overhead or board*
- *decide, together, the most important entries and put a star beside each one*
- *keep large chart to use in class daily; make copies to include in a student packet*
- *students form pairs or small groups and pick , from web, an idea for an in class demonstration of how math is used at work or at home*
- *Reinforce basic skills with selections from "Job Specific Applications for Math"*
- *ALWAYS use student generated examples first*
- *ALWAYS show how what they learn will impact them*

Math and Business

Before we begin our study of math, let's identify some ways we use math at work. Listed below are several math skills. Try to think of how you might use these skills while running your job. Then, write your on-the-job example on the line beside each skill.

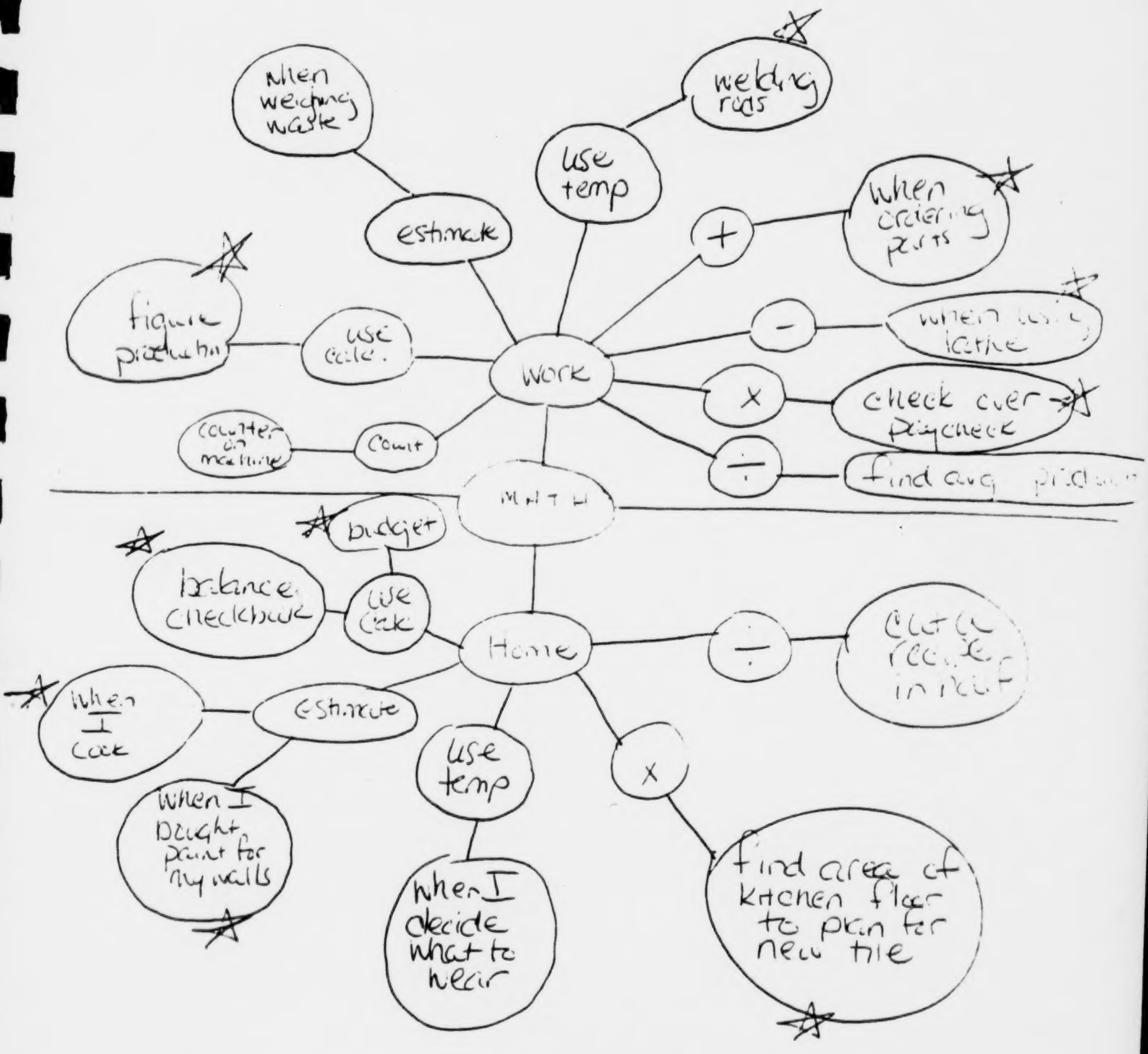
Listen, carefully as I read each skill word and go over its meaning. We will do the first one together.

____estimate Ex: when weighing waste, round up to next whole number
___ count ________________________________
___ add ________________________________
___ subtract ________________________________
___ multiply ________________________________
___ divide ________________________________
___ use fractions ________________________________
___ use decimals ________________________________
___ write numbers ________________________________
___ use percents ________________________________
___ use a calculator ________________________________
___ use temperature ________________________________
___ measure ________________________________

Look back at the skills for which you could not think of an example. Try to think of a way you use each of these skills at home and write your example.

Developer:
Jeanette L. Wood
WestPoint Pepperell Plant
Clemson, South Carolina
1993

WAYS WE USE MATH AT WORK AND


when weighing waste
welding rods
use temp
estimate
when ordering parts
+
figure production
use calc.
−
when using lathe
Work
×
check over paycheck
counter on machine
Count
÷
find avg production
MATH
budget
balance checkbook
use calc
Home
÷
cut recipe in half
When I cook
Estimate
use temp
when I bought paint for my walls
×
when I decide what to wear
find area of kitchen floor to plan for new tile

BEST COPY AVAILABLE

Include in student portfolio.
Highlight topics as you cover them
(You may later show a $ connection)

BEST COPY AVAILABLE

People
Leaping
Upward
to Success

Behind the Scenes

	definite strength	possible strength	possible growth area	definite growth area
PRESENTATION				
clarity of voices				
frequency of eye contact				
helpfulness of visual aids				
organization of ideas				
other/comments				
CONTENT				
accuracy of information				
clarity of explanations				
usefulness on the job				
does it teach?				
other/comments				
JOB RELEVANCE				
usefulness to present employees				
usefulness to new employees				
other/comments				

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DOS Course Objectives

Student: ______________________

Teacher: ______________________

The student will successfully master 15 out of 15 objectives from the following list. Please date each objective when it is mastered.

		Student	Teacher
1.	Show a listing of a directory.	-----	-----
2.	Show a list of specific files in a directory.	-----	-----
3.	Change the date.	-----	-----
4.	Change the time.	-----	-----
5.	Understand how to convert standard time to military time.	-----	-----
6.	Display the DOS version.	-----	-----
7.	Format a diskette.	-----	-----
8.	Create a file.	-----	-----
9.	Display the contents of a file.	-----	-----
10.	Change directories.	-----	-----
11.	Make a directory.	-----	-----
12.	Remove a directory.	-----	-----
13.	Erase a file.	-----	-----
14.	Rename a file.	-----	-----
15.	Create a BAT file.	-----	-----

People
Leaping
Upward
to Success

Evaluation

1. How many times do you usually consult with managers in your department during a regular work week?

2. Did you consult with managers more often than usual while working on this project?

   If yes, how many times?

3. How many hours outside class did you spend thinking about/planning/working on this project?

4. What strengths did you discover in yourself while working on this project?

5. What strengths did you discover in group members?

6. What changes would you make to improve coverage math on your job?

7. Is your department manager aware of your project?

   If yes, what comments has he/she made?

8. In what ways was this a learning experience?

7. Please answer the two math problems below.

   A. A loom cleaner is allowed 13 minutes to blow off and wipe a loom. He/She works 8 hours a day and has 2 20 minute breaks. How many looms can he/she clean per day? How much time will be left?

   B. There are 9 cleaners at WestPoint Stevens, Inc. They work 6 days a week. If each loom cleaner uses 30 oz of cleaner per day from a drum containing 35 gals. of Pro Solv #39 cleaner, how many days would it take to use the drum of cleaner?

8. Thank you for your interest in class.
   You taught me a lot! -Jeanette